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Improving Maternal Health in
Developing Countries

Community Health Cell

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Introduction

Efforts designed to improve the health of women of reproductive age in developing countries are commonly insufficient and ineffective. Maternal health, a prime determinant of infant health, generally remains poor. Although women of childbearing age constitute an immense national resource because of their crucial social and economic roles, this asset is continually devalued.

This publication has been designed to help program planners and managers make informed decisions in planning, developing, and evaluating maternal health activities in primary health care. It discusses maternal health problems and interventions used to alleviate them, as well as major medical, epidemiological, and managerial issues in improving maternal health. Following a narrative review of issues and problems in improving maternal health care, appendices describe training traditional birth attendants to improve maternal health, mother's cards and other tools useful in maternal care, selected programs' efforts to improve maternal health, and useful literature.

Maternal health is examined within the broader context of women's health. In this paper, maternal health refers to the health of women when they are particularly vulnerable to health problems because they are pregnant, giving birth, or breastfeeding. Aspects of women's health during pregnancy that have important influences on their children's health immediately after birth are also examined.

Some of the underlying causes of women's poor health in developing countries are mentioned but not analyzed in depth. These include women's low status in society,

extremely large work loads, limited access to education, and inability to receive health services because of cultural and other barriers.

The discussion of maternal health interventions emphasizes the personnel, financial, and organizational requirements of each. Most health planners feel that maternal health services should be organized in a pyramid, with community-level workers capable of carrying out simple activities identifying and referring high-risk cases to higher levels for more sophisticated care. Unfortunately, this model of appropriate services at appropriate levels has not been fully implemented in most countries because too many women lack access to even the most rudimentary level of the health system, and because many barriers prevent women from seeking or benefiting from appropriate referral care.

There are no quick and simple solutions to maternal health problems in developing countries. Although some simple, low-cost, effective health interventions are available, real improvement in maternal health requires significant improvements in women's status, women's education and income, and the overall capabilities of health systems.

In stating this, and in pointing out deficiencies in maternal health services, the authors in no way intend to denigrate or ignore the excellent work being performed by many programs and dedicated individuals. (See Appendix C for descriptions of some of these.) The aim is merely to point out some common problems and to offer solutions that have worked in some places.



Maternal Health in Developing Countries

MATERNAL HEALTH PROBLEMS

Illness and early death are common for fertile-age women in developing countries. While statistics on maternal morbidity (illness) and mortality (death) are often inaccurate and incomplete, it is clear that women in developing countries face a high risk of illness and death during their childbearing years and most specifically during pregnancy and childbirth. Almost all of the estimated 500,000 maternal deaths that occur worldwide each year occur in developing countries. *Maternal death rates in some developing countries*, as high as 10 or more maternal deaths per 1,000 live births in parts of Africa and Asia, are over 100 times the rates in many developed countries.

The major *immediate causes* of maternal mortality in developing countries are sepsis (infection), hypertensive disease (toxemia and eclampsia), and hemorrhage (heavy bleeding) during pregnancy and childbirth.

Maternal mortality cannot be understood, however, without examining the *underlying or secondary health and social causes*. On the health side are a variety of factors that lead to maternal morbidity, including anemia, malnutrition, other specific nutritional deficiencies, and many infections and metabolic disorders such as malaria and diabetes that affect pregnant women more seriously than other women or men. These health problems are often worsened by women's beliefs and practices, which are extremely hard to modify, in part because they are strongly supported by respected elders such as grandmothers.

Social causes of poor maternal health include women's poverty, lack of education, low status, expected role as the bearer of many children, and young age at marriage. Many customs and beliefs harm women's health. For example, women are often the last family members to receive food to eat. Women widely believe that they should limit any weight gain during pregnancy. These and many other customs, particularly during droughts and times of the year when crops are not being harvested, lead to increased maternal malnutrition. Maternal health problems are allowed to persist in part because women lack access to and confidence in health services.

Major health causes of maternal illness and death

Some of the major health causes of maternal (and related child) illness and death in developing countries are

discussed below. Public health actions that can be taken to prevent or alleviate these problems are also noted. This information is summarized in Chart 1 below.

- *Complications of childbirth:* Major problems of childbirth include infections, hemorrhages, toxemia, and various problems with the positioning of the fetus and speed of delivery. The risk of labor and delivery problems often can be predicted through prenatal screening and medical histories, for example: Is the woman under 18 or over 35? Is she malnourished? Is she having her fifth or later child? Has she had previous obstetric complications? (see the discussion of screening in Chapter 2). Some conditions leading to problems (e.g., anemia, malnutrition, malaria, or low weight gain during pregnancy) can be improved during the prenatal period. Skilled, hygienic delivery attendance along with effective referral systems can prevent some of these problems from leading to maternal deaths.

Toxemia, eclampsia, and other hypertensive disorders of pregnancy contribute to over a quarter of all maternal deaths in developing countries. When detected early enough, they can sometimes be controlled by dietary changes, extra rest, and drugs.

- *Maternal malnutrition:* Maternal malnutrition during pregnancy, childbirth, and breastfeeding underlies many maternal health problems in developing countries. The principal factors leading to this common condition include too many and too closely spaced births that inhibit mothers from recovering physically from pregnancy; general poverty and unavailability of food; lack of general education and specific knowledge about nutrition; cultural and dietary practices during pregnancy; the nutritional demands of pregnancy and lactation (300-800 additional calories per day); the added burdens of such acute and chronic infections and symptoms as pneumonia, malaria, and diarrhea on maternal nutrition; and the widespread belief among women that gaining too much weight during pregnancy will lead to a difficult and dangerous childbirth in which they and/or their baby will die.

The "maternal depletion syndrome" caused by these factors is so common in Bangladesh that people have a vernacular name for it—*shutika*. Maternal malnutrition leaves the mother more susceptible to illness and to pregnancy and childbirth complications, and, in cases of severe malnutrition, may affect a mother's ability to

breastfeed successfully. Infants born to malnourished mothers are much more apt to have a low birth weight and to die during their first month of life.

Numerous actions may be appropriate in particular settings for improving maternal nutrition. These include providing birth-spacing education and services, giving nutrition education, preventing and curing infections, giving food supplements, and organizing projects to increase women's income and food available for local consumption.



Ecuadoran mother and child. ICEF 8757. Wolff

- **Anemia:** According to the World Health Organization, anemia affects 230 million women in the developing world, including two-thirds of pregnant women and about half of all women of reproductive age. It is estimated that in Africa, 63 percent of pregnant women are anemic; in Asia, 65 percent; and in Latin America, 30 percent. Anemia not only causes general fatigue and lethargy among women, but it also contributes to maternal deaths during childbirth, particularly from hemorrhages, shock, and heart failure. Many factors contribute to the high prevalence of maternal anemia in developing countries, including a backlog of anemia from previous pregnancies; a low dietary intake of iron and folate (a B complex vitamin) due to such factors as food shortages, low income, food beliefs and behavior, and poor intra-family food distribution; infectious diseases, which increase the loss of essential nutrients and interfere with food intake; malaria, sickle cell anemia, and hookworm, which deplete iron stores; and, during pregnancy, the demand for nutrients from the developing fetus.

Anemia can be attacked either by supplementing iron intake (through food or pills) or lessening the causes of iron depletion (e.g., by treating malaria and hookworm, and by helping women space their births). In endemic malaria areas, treating that disease may well be the best tactic for decreasing maternal anemia.

- **Complications of abortions:** Clandestine or traditional methods to induce abortions or to treat spontaneous miscarriages lead to hemorrhaging and infections that cause many maternal deaths in developing countries. Many of these deaths result from illegal abortions, an estimated 35–55 million of which take place annually. In most developing countries, induced abortion is illegal or permitted only to save the mother's life. Where it is legal, access may be limited by bureaucratic restrictions, distance, or expense. In most Latin American countries, where abortion is illegal, it is estimated that one-third to one-half of maternal deaths result from illegal abortions. In Egypt, an estimated one in four pregnancies is terminated by illegal abortion, which is believed to be the country's highest cause of maternal death. Studies in Bangladesh showed that 26 percent of pregnancy-related deaths were caused by illegal abortions. This is one problem, of course, that is extremely difficult to quantify, since most illegal abortions are carried out in secret and go unrecorded, but there is substantial indirect evidence in the high percentage of hospital admissions due to complications of abortions.

The major steps that programs can take to decrease deaths due to abortion complications are to give counselling and family planning services to prevent undesired pregnancies, and, where abortion is legal, to provide safe and acceptable abortion services. In Korea and other countries, when abortion was legalized, maternal mortality rates fell dramatically.

- **Ectopic pregnancy:** This is a pregnancy that develops outside the uterus, usually in a fallopian tube. Once an ectopic pregnancy ruptures, the woman needs immediate medical care, including surgery to remove the ruptured tube and transfusions to replace lost blood. The risk of ectopic pregnancy, an important cause of maternal death in both developed and developing countries, is 6 to 10 times greater in women who have suffered from pelvic inflammatory disease. Gonorrhea and postpartum, post-abortion, and other infections also predispose women to ectopic pregnancies by weakening tubal tissue.

Teaching mothers and local health workers the signs and symptoms of ectopic pregnancy and the importance of immediate referral may help decrease maternal mortality. Local health workers should also understand

that a pelvic exam can rupture an ectopic pregnancy and lead to maternal death.

- *Sequelae of female circumcision:* Female circumcision (partial or complete removal of the female genitalia) is most prevalent in parts of Africa, the Middle East, Malaysia, and Indonesia. This is a serious health problem for young girls at the time they are circumcised due to the danger of infection, shock, severe bleeding, urinary tract complications, and accidental damage to surrounding organs. The most severe form of female circumcision is also a serious maternal health problem because the scar tissue from the operation may reduce the size of the birth exit so that the baby cannot pass through. This can lead to tearing of the circumcision scar with resultant bleeding and possible injury to the vagina and cervix, episiotomies (cutting) that can lead to infection, or to obstructed labor (and death for the baby as well as the mother).

Besides trying to prevent female circumcisions, programs can provide prenatal screening and referral of women whose scar tissue may complicate delivery.

- *Malaria:* Malaria remains widespread in parts of the tropics and subtropics, where it constitutes a common cause of maternal illness and death. Malaria symptoms are particularly serious in pregnant women because pregnancy suppresses a women's acquired immunity. Malaria contributes to maternal anemia as well as to general nutritional deficiencies. Besides causing great discomfort, some forms of malaria, if untreated, can lead to death. Malaria of the placenta increases the risk of spontaneous abortion and leads to the birth of many low birth-weight babies.

Malaria control is usually a long-range program goal. In the short term, programs can treat all cases of suspected malaria among women of childbearing age and give prophylactic (preventive) chloroquine to all pregnant women.

- *Goitre:* Goitre, which results from lack of iodine, is a common condition in certain countries and regions, particularly in mountainous areas far from the sea. Certain foods in the cabbage family contribute to goitre by preventing the body from absorbing a sufficient amount of the iodine that is consumed. Goitre in pregnant women often results in their bearing children who are small for their age, deaf or deaf-mute, and mentally retarded.

Where there is an organized commercial distribution of salt, goitre can be prevented most easily through the consumption of iodized salt. Intramuscular injections

and oral doses of iodized oil are used in some places for prevention and treatment of goitre.



One cultural reason for poor maternal health is that women maintain their normal level of hard physical labor while pregnant or breastfeeding. World Bank 368-LBR-1a, P. Johnson

Chart 1: MATERNAL HEALTH PROBLEMS AND PROGRAM INTERVENTIONS

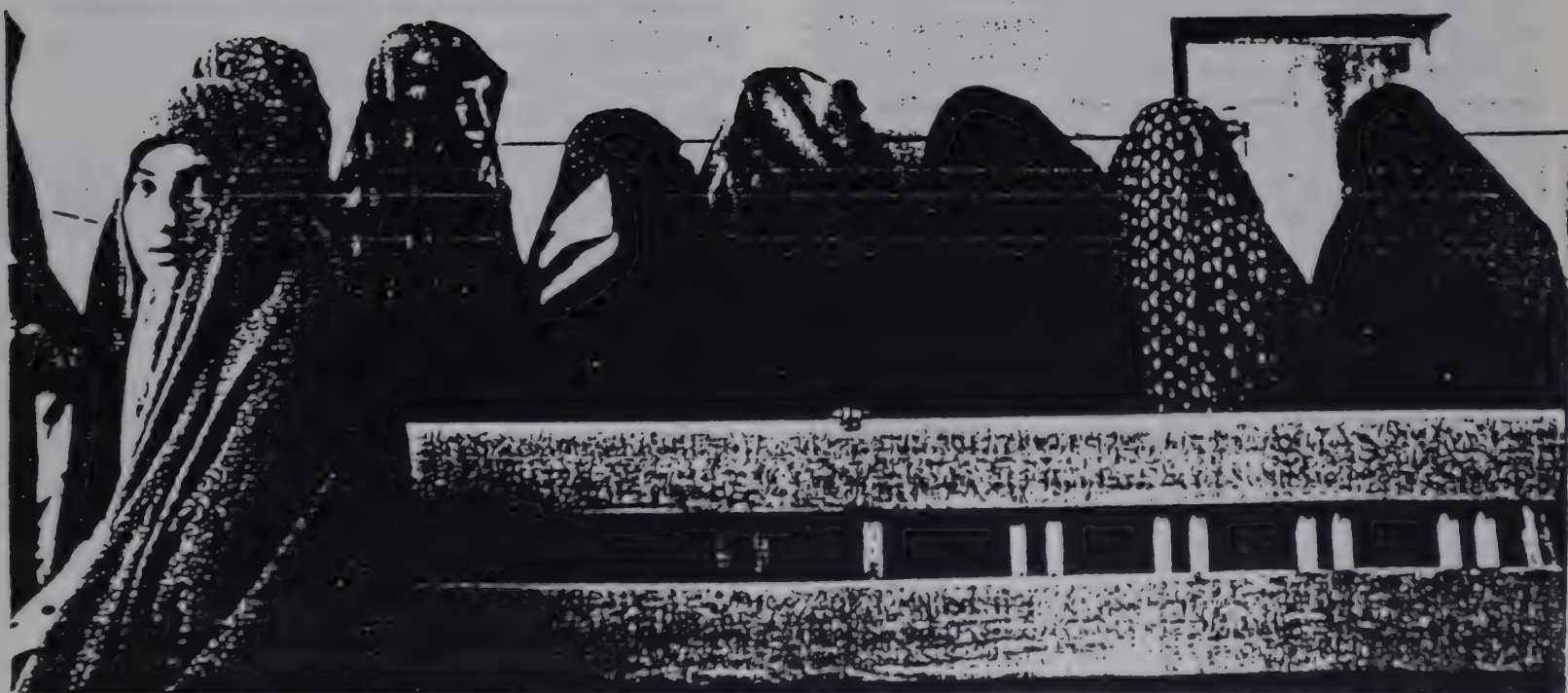
Maternal Health Problems	Results	Prevalence	Program Interventions
Complications of childbirth: infections, eclampsia (convulsions), slow labor, malpresentation, multiple pregnancy, retained placenta, pre-eclamptic toxemia, ruptured uterus, placenta previa, etc.	<ul style="list-style-type: none">• Many complications can lead to maternal and/or infant death	<ul style="list-style-type: none">• Complications arise in perhaps 10–20 percent of deliveries	<ul style="list-style-type: none">• Give prenatal screening and preventive care• Train traditional birth attendants and other community-level workers to recognize and refer high-risk pregnancies (as defined by the program); to discontinue dangerous practices; to use good hygiene at birth; and to treat certain complications of pregnancy and delivery• Train health personnel and establish and/or improve facilities to give prenatal, delivery, and postnatal care• Educate the public and public officials about the health effects of female circumcision
Hypertensive disorders of pregnancy (e.g., toxemia, high blood pressure)	<ul style="list-style-type: none">• Highly correlated with birth complications• Associated with fetal deaths and low birth-weight babies• Edema (swelling) and other symptoms cause discomfort	<ul style="list-style-type: none">• Affects over 20 percent of pregnant women in developing countries	<ul style="list-style-type: none">• Give health education to make dietary and other lifestyle changes• Screen and refer• Treat locally with drugs and education
Maternal malnutrition	<ul style="list-style-type: none">• For mother, leads to fatigue and weakness and may lead to susceptibility to infections, insufficient lactation, and maternal mortality	<ul style="list-style-type: none">• Affects the majority of women in many poor areas to some degree	<ul style="list-style-type: none">• Give nutrition education• Organize food supplementation• Give birth-spacing education and assistance• Give vitamins to pregnant women• As part of prenatal care, treat hookworm and other infestations and infections that use up maternal calories• Organize or assist gardens and other projects to grow food for local consumption• Organize or assist income-generation projects for women to enable them to buy more food

<i>Maternal Health Problems</i>	<i>Results</i>	<i>Prevalence</i>	<i>Program Interventions</i>
Anemia (mostly iron deficiency)	<ul style="list-style-type: none"> • Causes fatigue and weakness • If severe, can predispose maternal death during childbirth from heavy bleeding or heart failure 	<ul style="list-style-type: none"> • Affects an estimated 65% of pregnant women and 50% of nonpregnant women in developing countries 	<ul style="list-style-type: none"> • Screen pregnant women to diagnose • Educate to prevent hookworm and treat existing cases • Give iron or iron/folate tablets to anemic women • Give malaria prophylaxis or treatment • Give birth-spacing education and assistance • Give nutrition education (for women to eat more iron-rich foods)
Complications of abortions	<ul style="list-style-type: none"> • Maternal death in many cases 	<ul style="list-style-type: none"> • Cause of 30–50% of maternal deaths in Latin America; significant cause in other areas 	<ul style="list-style-type: none"> • Provide safe abortion services • Provide family planning services • Educate women not to seek unsafe abortions • Provide mechanisms for adoption of unwanted children
Ectopic pregnancy	<ul style="list-style-type: none"> • Without surgery and blood transfusions, leads to maternal death 	<ul style="list-style-type: none"> • This is an important cause of maternal deaths worldwide • It is 6–10 times more prevalent in women who have had pelvic inflammatory disease (PID) 	<ul style="list-style-type: none"> • Detect gonorrhea and treat it and associated PID • Recommend birth control methods other than IUDs for women who have had PID • Detect early; refer or treat women • Teach health workers how to avoid rupturing the ectopic pregnancy
Sequelae of female circumcision	<ul style="list-style-type: none"> • Scar tissue may lead to obstructed labor and maternal and infant death 	<ul style="list-style-type: none"> • This is a significant problem where female circumcision is prevalent 	<ul style="list-style-type: none"> • Campaign to stop female circumcision • Screen and refer high-risk women for institutional births • Have well-trained and supported personnel attend births
Malaria	<ul style="list-style-type: none"> • Fevers, chills, aches for mother • May lead to maternal death • May lead to miscarriages and stillbirths 	<ul style="list-style-type: none"> • Malaria remains widespread in many tropical areas 	<ul style="list-style-type: none"> • Give prophylactic drugs to pregnant women • Treat suspected cases of malaria among pregnant women • Take vector (mosquito) control measures

Chart 1: (cont.)

Maternal Health Problems	Results	Prevalence	Program Interventions
Goitre	<ul style="list-style-type: none">• Besides discomfort to the mother, frequently leads to birth of children with severe abnormalities (cretinism and deaf-mutism)	<ul style="list-style-type: none">• Estimated 25 million cases worldwide• Very prevalent in specific localities, especially in the mountains	<ul style="list-style-type: none">• Make sale of noniodized salt illegal• Give nutrition education (to eat more foods with iodine, especially salt water fish, and to avoid foods that inhibit iodine absorption)• Give iodized oil injections intramuscularly
Diabetes	<ul style="list-style-type: none">• Can lead to maternal death• Infants born to diabetic mothers have an increased risk of congenital malformations and other problems• Many chronic diseases, including diabetes, renal disease, and hypertension are aggravated by pregnancy	<ul style="list-style-type: none">• Varies greatly• Many diabetics in developing countries die before reaching childbearing age	<ul style="list-style-type: none">• Encourage severely diabetic women to use contraception, especially nonhormonal methods• Provide therapeutic abortions if mother has renal or vascular complications• Give special pregnancy and labor care—double insulin, strict antenatal monitoring, vitamin and iron supplements, C-section in many cases• Educate diabetic women to complete childbearing when they are young
Discomforts of pregnancy such as nausea, fatigue, and swelling	<ul style="list-style-type: none">• Varying discomfort among pregnant women	Affects many pregnant women to some degree	<ul style="list-style-type: none">• Give health education for women to rest, eat many small meals, etc.• Give drugs such as aluminum sulfate or local remedies
Sexually transmitted diseases (STDs)	<ul style="list-style-type: none">• Gonorrhea can lead to infertility and concomitant psychological problems for women, especially where their childbearing role is highly valued• Increased risk of cervical cancer, ectopic pregnancy, and PID• For fetus or infant, gonorrhea can lead to blindness, syphilis to spontaneous abortions, stillbirths, perinatal deaths, deformations, etc.	<ul style="list-style-type: none">• Infertility rates vary greatly; they are very high in parts of Africa but are mostly due to postpartum and postabortion infections rather than STDs• STD prevalence unknown but of great concern in some areas; rates appear to be increasing worldwide	<ul style="list-style-type: none">• Give education to prevent sexually transmitted diseases (by limiting sexual partners and/or using condoms)• Give education to recognize signs of STDs and to seek medical help• Screen pregnant women for STDs (clinical diagnosis or laboratory exam)• Treat persons with STD (particularly if pregnant) and their contacts• Put silver nitrate or other solutions in infant's eyes at birth

Related Child Health Problems	Results	Prevalence	Program Interventions & Interventions
Low birth-weight babies	<ul style="list-style-type: none"> • These babies have very high rates of infant morbidity and mortality 	<ul style="list-style-type: none"> • Varies substantially; quite common among poor mothers in developing countries 	<ul style="list-style-type: none"> • Screen pregnant women to identify malnourished ones; take steps to improve their nutritional status • Provide family planning education and services, especially for adolescent women • Promote breastfeeding and postpartum abstinence • Give public education for women to seek prenatal care • Improve the quality of postpartum care • Encourage pregnant women to moderate smoking and alcohol consumption • Cure or prevent infections in pregnant women
Neonatal tetanus	<ul style="list-style-type: none"> • Almost all babies who contract tetanus die, particularly without immediate, sophisticated care 	<ul style="list-style-type: none"> • Varies depending on immunization coverage and on birth practices (e.g., packing the umbilical stump) • Important cause of neonatal mortality in some areas 	<ul style="list-style-type: none"> • Give tetanus toxoid immunizations to all women of reproductive age (where prenatal coverage is low) or to all pregnant women (where prenatal coverage is high) • Train persons who attend births to use good hygiene



Iranian mothers wait for prenatal check-ups. ICEF 8848, J. Liftin

Maternal health problems of adolescent women

An estimated 10 to 15 percent of births worldwide are to adolescent mothers. These young women, especially those who have not had regular menstrual periods for several years and are not yet fully grown, are at a very high risk for problems during pregnancy and childbirth. This biological immaturity leads to low birth-weight babies, prenatal and obstetrical complications, and high maternal and infant mortality rates.

The risk arises among both unmarried and married adolescents, but often for different reasons. The unmarried adolescent frequently chooses abortion before delivery, the teenage bride almost never. A study in Brazil, for example, revealed that 20 percent of registered births are to mothers 10 to 20 years old, one quarter of whom admit having interrupted previous pregnancies through abortion. If she does not choose abortion, the unmarried adolescent may be ostracized or punished by her family and community.

Adolescents are also socially immature, which leads to their dropping out of school, problems with child care, and other problems. In some countries women are expected to be married at a very young age. The mean age at marriage is less than 15 in one third of India's districts. In Iran, the high death rate among babies of young mothers is reflected in a proverb: "The first two are for the crows." Not only do these young mothers suffer immediately from the health risks of early pregnancy, abortion, and childbirth, but also their having a child often means the loss of further education, income, and status. With additional education, the woman's long-term health status is likely to be better.

Any actions taken to improve the health of adolescent women are very culture-specific. The most logical area for improvement is through education of young men and women about family-life concerns. In some countries and areas, such family-life education is possible through the schools. The Chogoria Hospital program in Kenya, for example, trains teachers and church and community leaders in its Youth Education Program to help combat the high rates of unmarried teenage pregnancy. In many parts of the world, however, many young women have already left school and have assumed adult or semi-adult roles. These young women can either be reached individually through home visits or through youth and other groups. In Sierra Leone, young women are inducted into a female organization called the Sande. Some health programs in that country are improving maternal health through some of the Sande rituals: tetanus vaccinations have been incorporated into the puberty rites.



Adolescent mothers such as this one in Chad have a particularly high risk of maternal health problems. ILO

The mother-child unit

Maternal health is intimately related to child health. Poor maternal health and health care during pregnancy often has severe consequences for the infant's health at and after birth. The major mechanisms of these connections are described below.

- *Low birth-weight babies:* The 10 to 15 percent of babies born in developing countries that have low birth weights (less than 2,500 grams) accounts for 30 to 40 percent of infant deaths. It is quite possible that low birth-weight babies that survive have less than normal mental and physical development.

Major causes of low birth-weight babies are maternal malnutrition and anemia during pregnancy, malaria, sexually transmitted and other infections, hypertensive disorders of pregnancy, births to mothers who are very young or who have already had many pregnancies, and births that are so closely spaced that the mother has

insufficient time to recuperate from her last pregnancy before she is pregnant again. In developing countries, women gain an average of only 6 to 8 kilograms during pregnancy as compared to an average of 12 kilograms in developed countries. Some extremely poor women may gain virtually no weight at all during pregnancy.

Increasing birth intervals to more than 24 months should decrease the incidence of low birth-weight babies by giving mothers time to regain their health and nutrition. Programs can increase birth intervals by encouraging postpartum abstinence and breastfeeding, as well as by educating women and men about contraceptives and making them available.

- *Tetanus*: Maternal tetanus caused by a lack of hygiene during childbirth and abortion is fairly common in some countries. Tetanus is also a serious threat to newborns after a birth in unhygienic conditions, particularly from the cutting and dressing (care of) the umbilical stump. The one million infant deaths caused each year by tetanus could be prevented through proper immunization of the mother (before or during pregnancy) or care with hygiene during and after birth.
- *Infant morbidity and mortality*: Very poor maternal nutrition or health may affect a mother's ability or willingness to breastfeed, thus denying an infant multiple nutritional, health, and emotional benefits. Also, mothers with infections may pass these on to their infants.

SIGNIFICANCE OF MATERNAL HEALTH PROBLEMS

The prevalence of serious maternal and related child health problems in developing countries is particularly tragic because of the crucial roles that women play in most societies. The death or chronic illness of mothers is a multiple blow to their families. Besides having an average of 6 to 10 pregnancies, women in developing countries have such daily responsibilities as caring for all family members when they are healthy and sick, fetching wood and water, processing and cooking food, and doing agricultural work (in many places). Many households, in fact, are headed by women who have full responsibility for their family's economic support, health, and well-being—18 percent of households according to one survey of 71 countries. (66)

Rural women in developing countries produce at least 50 percent of the food. In Bangladesh, women are estimated to be responsible for 70 percent of the food production, 50 percent of the animal husbandry, and all of the food processing and childrearing. In Africa, women do 70 percent of the agricultural work. (332) In many parts of the world, women's heavy tasks are not

expected to diminish when they are pregnant. There is evidence that such hard physical labor leads to premature births; this question requires further study in developing countries.

PRIORITY GIVEN TO SOLVING MATERNAL HEALTH PROBLEMS

Considering the compelling reasons for emphasizing maternal health improvement, it would be expected that government and private health programs would devote a great deal of effort and resources towards this end. However, many programs, though they state that maternal and child health is a priority, do not devote sufficient resources to improving maternal health, or the resources they do invest have little impact. In many countries maternal health is not a real priority, despite the *dependence of national health on maternal health*. Why, then, aren't more efforts undertaken to improve maternal health?

First, maternal health may be neglected even within the context of maternal and child health programs because there is a lack of understanding and respect for women and their viewpoints by decision-makers in male-dominated societies. Evidence of this includes the absence of women in decision-making roles; the heavy work loads and absence of educational and career opportunities for women; the discriminatory nature of many countries' laws concerning women; and women who are disowned or otherwise punished by their families or husbands because they have not brought a sufficient dowry, because they have not borne children, or because they have not borne *male* children. Any problem relating to childbearing, such as a couple's inability to have children or the birth of a retarded child, is usually blamed on the mother. Women in many countries have limited opportunities to travel, work outside the home, become educated, or control money.

Many steps may be taken to improve women's status, including organizing, lobbying, protesting, educating decision-makers and the public, and changing or creating legislation. Efforts may be made to place more women in roles of decision-makers and service providers. Development programs aimed at improving women's education, income, agricultural production, and food processing and preparation can contribute significantly to maternal health, in part because they save women's time, decrease their expenditure of energy, and improve their social status. Changing women's roles in a culture is a long-term undertaking, but progress has been and is being made in some countries.

Second, there is a lack of understanding of the critical link between prenatal care and infant mortality. In fact,

most infant mortality, especially neonatal mortality, can be traced to health problems or lack of care of the mother during pregnancy and delivery. Education of health personnel as well as the public (including fathers) is needed for people to understand this intimate connection.

Third, many maternal health problems can be prevented or alleviated by relatively low-cost, preventive actions taken during the pregnancy period (e.g., giving tetanus immunizations and drugs to prevent malaria). However, most resources are put into treating these problems after they occur. This happens in part because maternal health services in developing countries have tended to copy services in more developed countries. Services have been too medically oriented, aiming for high quality curative care for individuals while underemphasizing preventive care for women in general. The tension between these two objectives is a basic determinant of a country's efforts to improve maternal health. Only a reorientation of the medical establishment and the public can gradually alter the curative orientation. Building in program incentives to foster preventive actions may also help.

Fourth, particularly in the past, some ostensible maternal and child health/family planning programs have

in fact been strictly family planning programs that omitted other important services that benefit maternal health. This has occurred because some international development agencies and governments have been more concerned with population limitation than with other women's health issues. While the family planning assistance provided by these programs has been beneficial to women's health, health workers may look upon a woman becoming pregnant as a program failure and neither they nor the program may offer complementary antenatal, delivery, or postnatal services to her. Clearly, the inclusion of these services along with family planning services is the more effective strategy for improving maternal health.*

Fifth, as with most public health services, services for women suffer because of insufficient funds and managerial abilities. These problems will diminish only with a stronger political commitment to improving health services in general and maternal health and preventive actions specifically.

*Experts disagree over whether family planning services per se are most effectively organized as vertical or integrated programs. Taylor et al. (311) argue that integration leads to benefits in effectiveness, efficiency, and equity of family planning and health services. Others argue that vertically organized family planning programs are more effective.



Women in developing countries do a tremendous amount of physical labor; their families are extremely dependent on them. WHO/8501.
P. Almasi

Program Actions to Improve Maternal Health

Program actions that may improve maternal health include activities to upgrade women's status and quality of life, to improve health conditions in general, and to prevent or cure specific maternal health problems.

IMPROVING THE QUALITY OF WOMEN'S LIVES

Researchers at the World Bank (77) and elsewhere have found that infant mortality, and presumably maternal mortality as well, depends as much on non-health factors as on any health services provided. The principal non-health factors that have been correlated with improvements in health are education of the mother, improvements in family income, and agricultural improvements that are directed toward improved local food consumption. Also, changes that decrease women's physical labor, such as installation of a village well or a simple grain threshing machine, may have a positive impact on maternal health.

W. Henry Mosley (211), in a study of infant mortality in Kenya, found that improvements in education and income alone seemed to explain improvements in mortality. He speculates that health services and interventions serve as intermediate variables; i.e., people who are better educated and who have higher incomes are more apt to want and to be able to afford health services. This hypothesis may be supported by findings of a study conducted in Chile. A highly significant correlation was found between mothers' education and perinatal mortality (fetal or infant deaths from the 28th week of pregnancy through the seventh day after birth), but that association disappeared for mothers with good prenatal care. (111) A study in Nigeria showed that there was some association between low fetal birth weight and economic hardship, especially rising food prices. (12, p.62)

Field experience confirms that non-health projects and improvements can aid maternal health. Agricultural improvements may contribute to maternal health by making more food available for mothers and other family members. For example, programs in Botswana, Kenya, Ghana, India, and other countries have used agricultural extension workers and credit facilities to help women's groups improve their food production, which in turn increased their personal income and reportedly improved women's nutritional status.

Education of mothers correlates with maternal health because better-educated mothers tend to have more

positive health habits, including fewer and better-spaced children. In Zaria, Nigeria, women who had some formal education had a maternal mortality rate four times less, a perinatal mortality rate five times less, and a prevalence of low birth-weight babies three times less than mothers with no formal education. (12, p.61) Numerous studies have found that the more education women have, the fewer children they have. Surveys in Nigeria indicated that an educated mother tends to become less fatalistic about illness, and that she will be treated more conscientiously by medical personnel. Moreover, the education of women greatly changes the traditional balance of family relationships by encouraging young mothers to challenge the authority of their parents and in-laws regarding child care.

It appears that income-generating projects may improve women's health through helping women achieve increased economic power: increasing women's ability to spend on environmental improvements; supporting a better self-image and greater self-confidence; and improving social status and mobility, made possible in part because of the "strength in numbers" of a whole group of women doing things differently. For example,

- The Grameen Bank Project in Bangladesh brings credit services to landless people who cannot offer collateral for bank loans. Among program participants, many health improvements, such as increases in family planning acceptance, latrine construction, and vegetable and poultry-raising, were reported. The effects on women's social status are described as "revolutionary." (173)
- The San Kancil project in Malaysia has created complexes consisting of a maternal and child health (MCH) center, preschool, and minifactory. Income-generating activities include production and sale of cloth toys and pottery, repairing and rebinding journals, preparing and selling prepackaged lunches, and doing the laundry of a hotel. The women in the project also enjoy increased social status and freedom, in addition to their new earnings. (402)
- In Colombia and Bangladesh (Savar), projects to improve women's income have led to an increase in their self-confidence and motivation to change their circumstances.

Although such projects may be very effective in improving women's lot, institutionalizing income-gen-

erating activities is difficult: many short-term program successes failed in the long run because of failure to assess adequately the market for women's products or services.

Many private development programs have combined health interventions with efforts to increase education, income, and agricultural productivity. Ministries of health can encourage intersectoral programs that support such non-health improvements, although inter-agency collaboration frequently is difficult. It seems to be occurring in Thailand where the Five-Year Plan for Maternal and Child Health establishes a development fund in each community to improve women's health status and standard of living and to upgrade community managerial skills.

IMPROVING HEALTH CONDITIONS IN GENERAL

The planning process for any health program should include a global analysis of *all* health problems, including those affecting maternal health, and an initial determination of general spending levels for each area of health action (maternal and child health, curative care, endemic diseases, etc.). Interventions aimed at improving health conditions in general—such as hygiene education, community garden projects, latrine construction, or a village water system—also improve maternal health specifically. Maternal care in high-risk or emergency cases depends on the health system providing accessible and capable referral personnel and facilities. Supplies, training, and other support for improving maternal health likewise depend on the organization and efficiency of the overall health system. This becomes clear when the resources required for various maternal health interventions are analyzed (see below).

Organizing specific services to improve maternal health

Basic services intended to improve the health of women of childbearing age can take place before and between pregnancies, during pregnancies, or during or shortly after delivery. While the categorization of specific interventions is far from exclusive (e.g., health education is appropriate during all three periods and tetanus immunizations during the first two), these periods do provide a useful framework for examining maternal health interventions (see Figure 1).

The remainder of this section examines some specific maternal health interventions from a managerial point of view. All effective program actions require trained and supported personnel either to carry them out directly or to motivate and assist community members to carry them out. Almost all actions also require some method of periodic contact between health personnel and all or a specific group of women. Managerial requirements for achieving this basic infrastructure for *any* action usually include:

- *Training*: a manpower utilization plan; pretraining research; a plan for training and using different personnel; training of trainers; a curriculum; a training schedule; logistical arrangements for training; trainee selection; manuals and audiovisuals; an inservice training plan.
- *Support*: ordering, storage, distribution, and repair systems; transportation and per diem for supervisors; supervisory guidelines; training of supervisors; building and upkeep of necessary facilities.
- *Contact*: supplied and equipped personnel and/or facilities; transportation to communities and homes; efforts to decrease barriers to women receiving services.

Figure 1: BASIC MATERNAL HEALTH SERVICES

Before and Between Pregnancies	During Pregnancy	During and Shortly after Delivery
Family planning education and methods	Prenatal screening	Skilled, hygienic attendance at birth
Nutrition education	Referral of high-risk women for more professional care	Treatment or referral of emergencies
Home gardens	Tetanus immunizations	Treatment or referral of postpartum complications
Iodine injections (for goitre)	Iron or iron/folate tablets	
Tetanus immunizations	Food supplements	
	Treatment for malaria, hookworm, and other infections	
	Counselling women about pregnancy and birth and about early child care, including breastfeeding	

Basic tactics for improving maternal health can be grouped under the following categories: prevention, screening, and treatment or referral. Each type of program action engenders its own managerial requirements besides the general ones listed above.

Prevention

- *Health education:* Health education has the potential for preventing many maternal health problems. Most but not all education on maternal health is directed primarily to mothers or potential mothers via communication between them and all types of health workers, including community health workers and community health volunteers. The likelihood that suggestions will be followed depends on the extent to which the message contravenes custom, the degree to which social supports for the desired behavior exist or can be built, and the cost to women in terms of time, money, or in-kind resources. Communication can occur through home visits, club meetings, community meetings, and one-on-one conversations in the community or at health facilities, among other settings. Methods of education

vary from a health worker's giving a lecture or individual advice, to facilitating and serving as a resource person for group discussions.(304) The managerial requirements for health education specifically include a study and analysis of people's knowledge, beliefs, and attitudes; development of an educational plan; development and testing of messages; training of educators; and preparation and pretesting of materials. Information on transmission of specific educational messages is given in Chart 2.

- *Organize community actions:* Many community actions can help improve maternal health and community health in general. These actions can be organized by any health worker who has appropriate training and orientation. Mothers' clubs, community health or general development committees, and even the traditional authority of village elders or political officials may serve as mechanisms for organizing community actions. Some projects may require program resources from beyond the community, e.g., start-up capital for income-generating projects. All actions require a sus-

Chart 2: HEALTH EDUCATION

Target Audience(s)	Basic Message	Likelihood That Education Will Be Effective
All women of childbearing age/pregnant women	Eat specific nutritious foods	Can be effective in lessening maternal malnutrition only if women have the means of improving their diets (and/or are allowed a sufficient share of the family food); traditional nutrition behavior generally is very difficult to change
Women who have just given birth (and their male partners)	Use breastfeeding and postpartum abstinence to increase birth intervals	If advice followed, should help increase birth intervals, which will benefit both mothers' and children's health; acceptance depends on cultural and psychological factors
All women of childbearing age (and their partners)	Use contraception to delay or prevent pregnancies (particularly for women who are under 18, over 30, who have had 3 children, who have just given birth, or who are severely diabetic)	Preventing or delaying births to high-risk women has great potential benefit to mothers' and children's health; acceptance depends on many cultural and psychological factors
All women of childbearing age/pregnant women	Wear shoes and build and use latrines	If advice followed, can help diminish anemia caused by hookworm; difficulty varies greatly
All women of childbearing age/pregnant women	Do not seek unsafe abortions	Of great benefit, but very difficult in most places
All women subject to specific nutritional deficiencies (or all women where a deficiency is widespread)	Eat the specific foods rich in the nutrient you lack, e.g., iron, iodine, vitamin A	Potentially effective in combatting anemia, goitre, and other vitamin deficiencies, but recommended foods must be available and affordable, and culturally acceptable
All women of childbearing age	Seek prenatal care once you are sure you are pregnant	Acceptance depends on custom, convenience, and barriers to seeking care; the health of women who do seek prenatal care is greatly improved, as is the birth weight and health of their babies

Chart 2: (cont.)

Target Audience(s)	Basic Message	Likelihood That Education Will Be Effective
All women of childbearing age (and their partners)	Limit sexual partners and/or use condoms	If advice followed, will help reduce sexually transmitted diseases (STDs), but it is difficult to reach high-risk persons and acceptance is very difficult, especially where STD is taboo for public discussion
All women of childbearing age (and their partners)	Recognize signs of STDs and seek medical help	Unlikely to be effective with more than a small portion of the public
Pregnant women	Rest, eat small meals frequently, don't overwork, etc.	Because of their traditional roles and expected behavior, it is often difficult for women to follow suggestions, but if they do, some discomforts of pregnancy will be alleviated
Pregnant women	Moderate smoking and alcohol consumption	If advice followed, should increase birth weights of babies
Pregnant women	Recognize danger signs such as bleeding and seek medical help	Effectiveness depends on barriers to women seeking services and to specific condition



Mothers can improve their own health and nutritional status by operating and eating produce from community gardens. WHO/18177.
N.N. Mashalaba

tained input of time from both organizers and community members. Managerial requirements usually include continuous organizational and motivational efforts, flexible planning, and intimate understanding of the community. Three examples of community actions that can enhance maternal health are listed in Chart 3.

- *Preventive services* (other than screening): Giving injections, drugs, contraceptives, food and other items to women or newborns is a common type of maternal health intervention. These services either prevent a problem entirely or prevent an existing problem from worsening. Often the setting is a prenatal consultation in some type of health facility, but these preventive actions can also take place during home visits or at some meeting place, such as a mobile unit or a market place. Community health workers or even community volunteers can dispense most of these things. Some programs give certain items to all women they contact, certain others to any pregnant women they can identify, and still others only to women at high-risk for particular health problems. All of these actions require systems for ordering, purchasing, storage, distribution, and record-keeping. Where high-risk women are singled out, the program also needs methods of identifying and contacting them. Some of these actions that can prevent a problem or prevent a problem from becoming more serious are listed in Chart 4.



Both this mother and her future children gain protection against tetanus through immunization of the mother. WHO 16970. P. Almasy

Chart 3: COMMUNITY ACTIONS

Community Action	Managerial Requirements	Likelihood That Action Will Be Effective
Train community health volunteers in health promotion and prevention	Formulation of job description, task analysis, training plan, training objectives, lesson plans, and training evaluation; to do this successfully, program staff need to gain a good understanding of the community	Effectiveness depends on numerous factors, including motivation, time available, and community standing of persons trained; appropriateness of volunteers' tasks; and program's ability to support and motivate volunteers over time
Organize community gardens or individual gardens to grow more food for local consumption	Varies; may need to arrange some outside resources	May have some effect on maternal malnutrition and anemia, <i>if</i> gardens are successful, women receive an adequate portion of the family food, and food grown is nutritious
Organize income-generating projects for women	Always requires extensive planning (organizing, motivation, doing a feasibility study) and ongoing management	Can help improve maternal nutrition <i>if</i> nutritious food is available, mothers buy and consume it, and project is well planned so that access to markets and demand for products allow for profits; money can lessen women's financial barriers to seeking health services; such projects can give women confidence and status that help them receive better care

Chart 4: PREVENTIVE SERVICES (OTHER THAN SCREENING)

What is Given	Likelihood That It Will Be Effective
Food supplements	Can enhance maternal health and infant birth weight, but usually effective only when targetted to malnourished women rather than to all women or all pregnant women; may create dependency; may be useful as an incentive for women to attend antenatal clinics; can be combined easily with nutrition and health education
Vitamins	Generally useful only for specific vitamin deficiency such as vitamin A; can help prevent vitamin deficiencies of pregnant women, but will not help with overall weight gain
Iron or iron/folate pills	Can reduce anemia if women take pills regularly and start early enough in pregnancy; may be difficult to convince women to take pills because pills taste bad and because women are afraid of getting big and "strong" when pregnant for fear of a difficult delivery
Prophylactic (preventive) drugs for malaria to pregnant women	Effective for combatting malaria and related anemia, if taken as directed and begun early in pregnancy; some resistance to chloroquine has been reported in some places
Contraceptives	No method other than abstinence is 100% effective in preventing unwanted pregnancies, but contraceptives can prevent or delay high-risk pregnancies and complications of abortion; difficult to reach a large portion of women in some countries due to cultural and social norms
Tetanus toxoid	95% effective in preventing maternal and neonatal tetanus if given in 2 doses with boosters every 5 or 10 years and if vaccine is not spoiled; this is a very cost-effective way of saving maternal and infant lives where tetanus is prevalent
Iodized oil injections intramuscularly	Very effective in reducing visible goitres and preventing goitre for 3-5 years; cost varies but averages US 40c per injection



By giving mothers prophylactic malaria drugs, programs can protect mothers against malaria and anemia and their offspring from stillbirths and other consequences of the disease. WHO 4445, P. Pitter

Screening and the at-risk concept

Screening pregnant women for current and potential problems is an important step towards treating or preventing those problems. Screening requires some method of identifying pregnant women; a locally appropriate list of risk factors; trained personnel to screen; a record system; ways of helping at-risk women at the community level; and, usually, a functioning referral system.

For antenatal care, which experience has shown to be a key to lessening maternal health problems, the first task is to identify pregnant women. In educated, urban populations, pregnant women come in and register for antenatal care on their own initiative. However, because this is not the norm in isolated rural areas with widely scattered health facilities, active efforts must be made in the community to identify and register pregnant women. The most logical people to do this are traditional birth attendants (TBAs), community health workers (CHWs), and other community-level health workers. They can do this through regular rounds of home visits and/or through ongoing education of women about why they should report their pregnancies. In some cultures, however, pregnancy is hidden as long as possible, so detecting pregnancies is difficult.

Although many health programs recommend that pregnant women be examined several times during pregnancy, each program should set realistic goals. For example, the goal in rural areas might be for each pregnant woman to be seen by a trained person once in early pregnancy and once during the last three months. TBAs can provide routine care such as giving malaria prophylaxis. High-risk women would need more frequent contacts (see below). Each program should set goals that are feasible for it to reach.

Most programs that provide maternal health services use the at-risk concept in order to use scarce resources most effectively. The idea of the risk concept is that, through screening, individual women at highest risk of preventable or treatable problems will be identified to receive appropriate advice or care at the local level or to be referred. The concept also means that women who do not need special care will not receive it.

The use of the risk concept in pregnancy care basically is aimed: (1) to give the individual health worker an "epidemiological" understanding of the relationship between certain signs or "factors" such as "high age of mother," "short stature," and the risk of complications during delivery or pregnancy; and (2) to make the health worker apply this every time she or he examines a pregnant woman, and take appropriate action, which might be referral, close and frequent supervision during the rest of pregnancy, or interventions to decrease the risk, such as treatment of anaemia.

Typical Risk Factors	
<input type="checkbox"/>	Weight of 38 kilograms or less before pregnancy
<input type="checkbox"/>	Weight of 42 kilograms or less at the 34th week of pregnancy
<input type="checkbox"/>	Height of less than 145 centimeters
<input type="checkbox"/>	Severe paleness
<input type="checkbox"/>	A child from a previous delivery who weighed less than 2 kilograms at birth
<input type="checkbox"/>	Swollen legs during previous or current pregnancy
<input type="checkbox"/>	High blood pressure
<input type="checkbox"/>	Age below 18 or above 30 at first pregnancy
<input type="checkbox"/>	Age 35 years or older at the time of pregnancy
<input type="checkbox"/>	History of abortions or stillbirths
<input type="checkbox"/>	Fifth or later child
<input type="checkbox"/>	History of bleeding during pregnancy
<input type="checkbox"/>	Possible twins
<input type="checkbox"/>	Previous caesarian delivery
<input type="checkbox"/>	Jaundice (hepatitis) and
<input type="checkbox"/>	Malpresentation (e.g., breech — bottom down instead of head down — identified during the last month of pregnancy)

In the simplest risk systems, the local health worker uses a checklist of the presence or absence of certain factors. The factors that are important must be identified locally on the basis of an analysis of local data: What may be a risk factor in one setting is *not necessarily* a risk factor in another setting. Programs usually base the priority they give to specific problems on the problems' prevalence and severity, and on the possibility of coping with them at the periphery. Identifying problems that cannot normally be handled satisfactorily is not productive.

In some programs, the risk approach requires the health worker to compile a risk score, but experience has shown no advantage over using a simple checklist. If a score is used, the number of points of each woman is added up. Women with a score above a certain cut-off or women with individual problems are deemed to be at high risk and, if possible, should be referred to a health facility and/or given special attention at the community level. Several methods of measuring specific risk statuses are discussed below.

Measuring arm circumference can be used to determine a mother's nutritional status. Color-coded arm tapes are being tested that indicate if a mother is malnourished and therefore has a high chance of having a low birth-weight baby. In India, an arm circumference tape has been used with three colored bands to indicate mild, moderate, and severe malnutrition of the mother. The arm circumference measurement has been highly correlated with the mother's weight and with several

other risk factors and therefore seems to be an appropriate measure of maternal risk. The use of the arm circumference tape avoids the need for a scale in isolated communities. It is important, however, that each program sets its own risk criteria for arm band measurements, since genetic factors influence the minimum acceptable weight for different groups of women. One standard for all countries *cannot* be used.

Where a scale is available, maternal weight gain in pregnancy has been shown to be an important indicator of maternal nutrition. Height measurements have also proven useful in many projects. Both height and head circumference are good indicators of past malnutrition.

Where most women are anemic, identifying individual anemic women is not worthwhile, but where individuals need to be identified for treatment, at least two simple methods can be used. Both avoid the need for taking a blood sample and the use of a machine or laboratory techniques for determining the hemoglobin level. One is the anemimeter, which is a tiny chart showing three color bands that correspond to mild, moderate, and severe anemia when held against the conjunctiva, the reddish area behind the lower eyelid.



Checking the ankle of a mother-to-be for pre-eclampsia, which could result in premature labor. WHO/18139, P. Harrison

The second tool for gauging anemia is the anemia recognition card. This durable, plastic card provides color photographs showing the difference between anemic and healthy women's lips and tongues. In screening for anemia, a health worker can compare the color of the patient's mouth to the photographs. Printed on the card is advice for combating anemia—take iron tablets and eat green leafy vegetables. It should be noted that these cards are not appropriate where mucosa are pigmented or where beetle nut chewing is common. Also, green leafy vegetables alone will not give sufficient iron to treat anemia. Where indigenous teas block the absorption of iron, their consumption should be discouraged.

The Talquist method of anemia recognition—which involves pricking the finger, putting the blood on blotting paper, and matching the blood with a color chart—has been shown to be inaccurate in many studies, certainly no more accurate than the simpler methods described above.

Mothers' or antenatal cards, have been used by projects in Kenya, India, Botswana, Somalia, and other countries to help detect high-risk pregnancies and as a medical record of the mother's pregnancy. The World Health Organization has developed a prototype home-based mother's record that is about to be field tested. This and two cards used in India and Botswana are described in Appendix B.

In Tanzania, the antenatal card is designed to identify specific risk factors and levels of action that might be taken. There are three different groups of risk factors on the card—those associated with medical and obstetric history, those arising during the prenatal period, and those occurring during labor and delivery itself.

The at-risk concept is valid for non-pregnant women of childbearing age as well as for pregnant women. Many of the risk factors are indeed the same, only for non-pregnant women they can be used to gauge which women should be most encouraged to practice family planning and which women need immediate attention for chronic and acute problems. The at-risk concept can be used to identify high-risk families that should be visited more often or given special attention in some other way. The risk factors in this case are quite different, such as low family income, absence of a male head-of-household, and a high ratio of infant deaths to live children. For example, an urban health program in Cali, Colombia, surveys family health, housing conditions, and social conditions to calculate a family's risk score. High-risk families are visited five times a year, medium-risk families three times, and low-risk families twice. (329)

Treatment and referral

Once an actual or potential maternal health problem has been identified, a community-level worker may either treat the case or refer it. While many risk conditions and symptoms can be treated through simple actions taken by mothers and community-level workers, some conditions and many emergencies of pregnancy and childbirth are difficult to treat at the community level.

Programs must decide if women should be discouraged from delivering at home and encouraged to deliver in a maternity clinic or hospital, particularly when no high-risk factors are discovered. In many countries, the strong recommendation of the Ministry of Health is that all births take place in hospitals or maternities. In some circumstances, however, encouraging hospital births for all women has several potential disadvantages. Hospital births are much more expensive than home births. Hospital care in some rural hospitals is very poor, and hospital infections are common. Many women from traditional cultures may be very fearful of hospital births and may not understand and accept the facts that their families cannot accompany them and that the traditional rituals that accompany childbirth cannot take place. Worldwide, 75 percent of births take place at home. There is no way that institutions could cope with all of these births.

Regardless of whether facilities are to be used for all births or only for high-risk ones, governments should invest sufficient money to make care in facilities safe and effective. They must strive to balance improvements in institutional capacities with improvements in screening and health care capabilities in more isolated areas of the country.

It is highly desirable that each level of the health system be capable of giving appropriate services and that referrals among levels function well. Maternal care services based on the risk approach incorporate three types of referral. In order of increasing complexity, these are planned delivery in a health facility; referral when complications start or can be foreseen during delivery (transport can be arranged within a few hours); and emergency referral, the most difficult to arrange in many cases. All types of referral require (1) a risk identification system; (2) personnel trained to screen and recognize signs of risk and to refer; (3) a means of transportation; (4) a referral facility that will give adequate care; and (5) an effective system of information exchange among levels of care.

Planned delivery in a health facility is feasible where TBAs, CHWs, or other community-level workers have

been taught to recognize signs of potentially high-risk deliveries. With sufficient notice, women can usually arrange for transportation to a facility. Problems may arise, however, with this or any type of referral. Women may refuse or may not be allowed to travel to a town. Women may be afraid of modern medical care and facilities, so they would rather seek assistance from traditional healers or TBAs. Women may not be able to afford transportation and lodging costs in a town. Programs that are sensitive to women's feelings and needs can learn of such barriers and work to overcome them.

Referral during delivery when complications start or labor is not progressing is difficult or impractical in situations in which women live far from facilities, roads, and frequent vehicular traffic. In many circumstances, however, programs can make special arrangements with the community (e.g., to borrow a horse and buggy) or with owners of some vehicles.

Finally, referral for an emergency during pregnancy or delivery is very difficult in many places, both because of transportation difficulties and because women may die in transit.

Geographical and cultural barriers to referral are very great in countries such as Sierra Leone. There, only 33 percent of villages are on all-weather roads; 10 percent are on dry-season roads only; and 57 percent are not accessible by road. Despite this and the fact that midwives in isolated villages know techniques for handling many obstetric emergencies, the government of Sierra Leone, as most governments, teaches midwives to refer all emergencies.

Where midwives are quite keen to know better techniques for handling obstetric emergencies in isolated villages, and promoting better maternal and child health, they are taught only to screen and refer. Teaching them only to refer emergencies is unrealistic in a country where about two-thirds of villages are not on all-weather roads, and where those on a road may have only a vehicle or two a week passing through. Even where transport is available, women may not go who cannot afford the cost of transport, the 'dash' for a hospital bed, and the cost of drugs purchased from a pharmacist. Women also fear the pain of routine episiotomies; the pain of cutting being culturally defined as the worst pain humans can endure. There are other cultural and economic constraints as well, mitigating against a simple referral system. (200)

It is true that little can be done for some obstetric emergencies without the ability to perform caesarean sections and give blood transfusions and sophisticated drugs—generally impossible in a rural village or even in some rural health facilities. It appears, however, that more programs should give better preparation to vil-

lage-level workers and staff of the most isolated facilities (including doctors and nurses) to handle some emergencies, particularly where successful referral is unlikely or not feasible. (11, pp. 111-130) The ability of peripheral personnel to handle emergencies, of course, depends both on the nature of the emergency and on their having basic equipment and receiving adequate training, supplies, and supervision from the program.

Programs should consider, "Is it more dangerous for a peripheral worker to refer a woman who probably will not or cannot seek referral assistance, or is it more dangerous for the worker, given training and support that is feasible, to try to solve the problem him/herself?" This question must be answered in specific locations and under specific circumstances.

Many programs have not carried out sufficient analysis of the barriers to referral and the capabilities of the referral system and of what peripheral workers are capable of handling relatively well and in relative safety. On the other hand, efforts are needed to decrease the barriers to women being referred and to establish effective risk-identification and referral systems.

Some programs have taken innovative and inexpensive steps to facilitate routine or emergency referral:

- A new, simple-to-make lightweight ambulance attachment for a bicycle, safely holding a detachable stretcher, was developed in Malawi and is now available from British Aid.

- In Kasa, India, villages have no telephones or telegraphic service, so 65 homing pigeons were trained to carry emergency messages in capsules buttoned to their legs. These pigeons took about 30 minutes to fly a distance of 40 kilometers.

- In Zambia, referral patients are given chits that can be used for free transportation on government or private busses.

Each program must decide how much money and effort to invest in the complementary actions of (1) improving peripheral workers' ability to treat simple problems while recognizing and referring complicated ones, (2) improving the capabilities of the referral system and referral care, and (3) working to decrease financial, geographical, and cultural barriers to referral. (See the discussion of facility-based services in Chapter 3.)



Although some mothers have easy access to facilities, many mothers must be treated in their communities—or receive no treatment at all from the formal health system. World Bank MISC-BD-27s, T. Sennett

CHAPTER 3

Access to Maternal Health Services

Even if the most effective and efficient services were offered, their impact on maternal health would be very limited if they reached only a small portion of women. This, in fact, is the situation in many countries. Most maternal health services are provided through facilities in major cities and towns and are utilized by the small portion of women who live near the facilities. A recent study of the Punjab region of Pakistan, for example, revealed that only 25 percent of women had received any prenatal care. This is typical of many countries and areas.

There is, however, much variation in coverage among different countries. Some countries such as Botswana, Costa Rica, and Panama have very high maternal health coverage. A 1979 survey in Panama found that 80 percent of pregnant women had received prenatal care during their last pregnancy (73 percent beginning in the first trimester); 84 percent had delivered in a medical facility; and 67 percent had had a postpartum checkup within a month of giving birth. However, even in Panama, there is a relatively low use of services by the highest risk women (because of age or other factors). To be more effective, health programs need to organize maternal health improvements in such a way that the services seek out the women rather than requiring women to seek out the services, which many women will not or cannot do.

A wide variety of personnel have been utilized in different countries to help improve maternal health. These include medical doctors, nurses, various levels of midwives (fully trained, auxiliary, and traditional), special maternal and child health personnel (such as Tanzania's MCH aides and Burma's auxiliary midwives*), community health workers, and community health volunteers. Not to be forgotten are mothers, mothers-in-law, and husbands, all of whom may play important roles in improving maternal health.

Programs can provide maternal health services on three levels: at facilities and mobile units; in communities through workers who visit or live in the community; and at the family level by orienting mothers to improve their own health. These levels are by no means mutually exclusive, but rather are complementary; all or most of them should be present in some configuration in all programs.

Whether given in a facility, mobile unit, or home, standard prenatal care (mostly screening and prevention) *can* be effective in improving the health of women and children who are reached, particularly when high-risk women can be referred. In Zaria, Nigeria, antenatal care reportedly reduced maternal mortality 17 fold; perinatal mortality six fold, and the prevalence of low birth-weight babies by nearly six fold. (11, p.58)

Antenatal Care

The following describes a typical mobile team's antenatal activities in the Gambia:

Around 8:00 a.m., a team of ten persons starts out: a driver, a Sister (head of the team), a senior midwife, two community health nurses, and five auxiliary nurses. They head towards a village with a sub-dispensary (an empty facility built by the community). Their equipment consists of doses of vaccines (BCG, DT, tetanus toxoid, measles), a trunk full of cards and ledgers, another one with drugs and medical equipment, as well as visual aids for health education. The village is reached about 10:00 a.m. Some 50 women with infants and 30 pregnant women will be waiting, but eventually some 200 infants and 100 pregnant women will be seen. The mothers are gathered for a short health education talk. Babies are seen and weights are recorded, health is assessed and appropriate immunizations or medicines are given. Pregnant women have weight and blood pressure recorded, their abdomens examined and advice is given by the midwife. All pregnant women receive two injections of tetanus toxoid. Cards and records are well kept and a register allows for easy retrieval of patient information. (55)

FACILITY-BASED SERVICES

Antenatal care is commonly given at health centers and hospitals. Women are asked to come to the facility once a month (or more frequently later in pregnancy) to be weighed, have their blood pressure taken, be measured, and screened for any problems that may occur during pregnancy and childbirth. Women may be given health education, tetanus immunizations, iron/folate pills, or food supplements. Specific health problems are treated or referred. (See box.)

While these services are normally beneficial to women who receive them, the majority of women in most countries do not, because facilities are not available or convenient, or because various barriers do not permit or encourage women to seek services. Because in most countries only a small percentage of women receive

*Burma gives six month's training to community-selected, village-based auxiliary midwives. These volunteers, some of whom are traditional birth attendants (TBAs), perform a variety of MCH tasks.

antenatal care in facilities or give birth in them, programs that depend on women's seeking care at such facilities may have only a limited impact on maternal health.

Barriers to women seeking or receiving services at facilities encompass financial, geographical, and cultural/quality-of-service factors. These are discussed below, along with examples of how they may be overcome.

Financial barriers

Financial barriers prevent many women from receiving health services. Any expenditure may be difficult because women may not have access to the family money, or the family may have no money. Women who must travel to services may have to pay transportation costs (often the principal expense associated with receiving care); may lose money they would have earned or food they would have planted, gathered, or sold; and may have to pay fees for services and/or drugs. Many women and families in developing countries must make difficult decisions about whether it is worth the time, bother, and expense to seek health services.

Services can be made affordable to women. (In Thailand, the government distributes free health cards to the poorest people and provides subsidized services for another large group.) Special efforts can be made to provide transportation and to make services available in more communities. Preventive services can be given at no charge. A fixed charge can be levied that covers all antenatal visits and delivery care, thus encouraging women to come many times. To encourage antenatal visits, fees can be lowered for women who register early in their pregnancy. Refunds can be given to women who complete a minimum number of antenatal visits. Finally, the government or an individual health facility can subsidize referral visits to other facilities.

Geographical barriers

Health services in most countries discriminate against rural dwellers—not only by having facilities more dispersed but also by having far fewer facilities and trained health personnel per capita for them than for urban dwellers.* This situation clearly limits the availability of government health services to rural women, many of whom are outside the reach of conventional health services. It has generally been found that people seek preventive services only when they are offered within a three to five kilometer walk from where they live.

*Poor urban dwellers, however, still face cultural and economic inaccessibility of services.

Health programs can improve the geographic availability of preventive services, hygienic deliveries, and improved problem identification and treatment either by building and staffing new facilities, preferably with community support; by training and supporting community-level workers; or by having health workers periodically visit communities and/or the homes of all women or at least of high-risk women or families. Unless there are village-based health workers, many people will have to travel hours or even days in order to receive services.



Health workers who visit communities, such as these nurses in New Hebrides, break down geographical barriers to services. WHO/12003, T. Takahara

Cultural/quality-of-service barriers

Many cultural factors inhibit women from seeking services at health facilities. Barriers are also created by the insensitivity of the health staff and the poor quality of services in some places.

One cultural explanation for women's lack of motivation to use maternal health services is the belief in developing countries that pregnancy and childbirth are natural events, not situations of great risk that require skilled outside assistance. Many programs fail to study, understand, and work with such cultural beliefs and customs that are at least as important as environmental factors in contributing to maternal health problems.

Beliefs and taboos concerning women during the pregnancy, birth, and postpartum periods may have important effects on women's health. Not all of these beliefs, of course, are harmful, but some of them clearly are in specific localities. For example, taboos against pregnant women eating eggs, fish, or goat's meat exist in some places. In Ethiopia, tradition advocates avoiding milk and green vegetables. In Nigeria, food taboos include the banning of snails, bananas, plantains, and venison from a pregnant woman's diet. Similar practices and aversions are reported in Yemen, Oman, and Sudan. In Sudan, pregnant women avoid many foods, including the national bread and many types of meat, and also restrict total food intake. In many countries, women are the last family members to receive food to eat. Particularly during droughts and times of the year when they are not harvesting crops, women are likely to be malnourished.

In many developing countries, there is a widespread belief that women should limit any weight gain during pregnancy to avoid dangerous births (see Chapter 1). This belief may greatly restrict weight gain in pregnancy and lead to low birth-weight babies and subsequent high infant mortality.

Some obstetricians who work in developing countries feel that this belief may have some validity, as indicated by the widespread problem of pelvic disproportion, related to failure to grow in female children, which causes obstructed labor. In countries such as Sudan, the scar tissue from female circumcision also contributes to the prevalence of obstructed labor. While it is true that specific women of a very small stature should not gain excessively during pregnancy, the fact remains that most women in developing countries gain too little weight in pregnancy to warrant any general concern about excessive weight gain.

Beliefs and taboos do not only relate to food. In the highlands of Papua New Guinea, women used to give birth and spend the postpartum period in a specially

constructed hut used only for that purpose and demolished afterwards. This hut therefore was clean, with no animals or children in it, and was a good environment for delivery. With increasing education, the superstition of building the hut to keep demons away disappeared, so women now deliver in the family hut among pigs and chickens, with a greater risk of postpartum infection and neonatal tetanus.

Besides reluctance or refusal to be treated by a male or a young female who is not herself a mother, women do not seek services because they have been insulted, mistreated, and made to wait a long time to receive services on other occasions; or because doctors, nurses, and others providing services do not understand and are not sensitive to the women's cultural beliefs and behavior. In an African country where women expect any health treatment to begin with a purge to purify their stomach, health personnel ignore or are ignorant of this belief. Two studies of the health services in a Central American country found that hospital doctors paid no attention to referrals from auxiliary nurses and community health workers. Rural people reportedly said such things as "They didn't even look [at the referral slip]," "They threw it away," and "The doctor looked at me and asked me, 'Who is this person, does she [the auxiliary nurse] think she knows how to diagnose?'" (205)

One problem with relying on facilities for antenatal, delivery, and postnatal care is that women's heavy work schedules make it very difficult for them to take time off to go for clinic visits. Also, fixed days and times for antenatal and postnatal clinics may not be easily understood by many women who do not have watches, who may not be aware of the date, and who do not share the health staff's assumptions about the importance of schedules. Women arriving for assistance at a facility at the "wrong" time, even after a long and difficult journey, may not be attended by the health staff. Providing flexible hours that are convenient for women could increase the use of offered health services. A study in Kenya showed that when maternal and child health services were integrated with other clinic services and provided daily, utilization increased by 50 percent.

The poor quality of the services reinforces existing cultural barriers in some places. A study in one country found that rural health services were characterized by "discrimination against the poor and the oppressed, poor quality of medicines...lack of medicines, overcrowding and long waits, nepotism, bribery and indifferent and often rude behavior of the staff. . . ." (51)

There are many steps that can be taken to make services more culturally acceptable. These include having sufficient interaction with and gaining a sensitive understanding of the community before service delivery begins; sensitizing the health staff to important beliefs and customs; making services more culturally appropriate; training more female health workers, including traditional birth attendants; and providing public education to overcome fears of receiving existing services.

In Malawi and elsewhere in Africa, health centers help organize community-built and run self-care hostels near the health centers. In Zaire, a "lying-in village" was established where women could live with a female relative during the last weeks of pregnancy. These women were given rest and supplements of rice and palm oil. Their stillbirth rate was less than half that of women outside the lying-in village. At Nangina Hospital in Kenya, mothers who live far away can stay at an antenatal hostel on the hospital grounds. They can come when they are near their delivery date or when they need a checkup or follow-up visit. They stay free of charge but prepare their own food and bring their own linens. Howard Hospital in Zimbabwe established a small maternity village where women live a few weeks prior to their expected delivery date. Besides being examined daily, the women are taught mothercraft.

Other programs have taken similar steps.

- The Yonsei Community Health Teaching Project in Korea added small annexes resembling farmhouses to house subcenters for inpatient care and deliveries. Since the rural people are not accustomed to beds, these rooms have heated floors. In this manner, it was hoped that relatives would be able to care for the ill in a familiar environment, and that students and health staff would be able to practice their skills under rural conditions. The plan was designed to overcome the cultural objections to hospital care because of the separation of patients and their families. Unfortunately, the results of this innovative effort were disappointing. First, villagers still preferred delivery at home. Second, when they seek institutional care, they tend to choose clinics and hospital facilities rather than health subcenters.

- Some programs have allayed fears about institutional deliveries by allowing relatives to take away the placenta and other products of conception for disposal in the traditional manner (e.g., in northern Mexico) and by allowing free visiting of relatives (e.g., in parts of Africa).

- Many projects, based on their experience, have changed selection criteria for community health workers (CHWs) to encourage the selection of more women and more mature persons. For example, the National

Health Guides Scheme in India, based on several field evaluations, changed its criteria to encourage the selection of more women, especially women literate in local languages. Men are to be selected only when appropriate women cannot be found. Other projects have reduced CHW literacy requirements which tended to discriminate against women.*

In sum, barriers to women receiving services are numerous and serious, but they can and have been overcome.

COMMUNITY-LEVEL WORKERS

Community-level workers bring services close to women rather than waiting for women to seek services. Moreover, community-level workers can take the majority of preventive and curative health actions that can improve maternal health: Only a minority of women, perhaps as few as 10 percent, need be seen in a facility by highly trained personnel. To be effective, however, community-level workers require good training, management, and support—prerequisites that many programs fail to provide.

In the past decade, hundreds of programs have trained workers to provide maternal health services in communities. These include health workers who visit communities; doctors, nurses, and others on mobile health teams*; and particularly community health workers (CHWs); community health volunteers; and traditional birth attendants (TBAs).

Workers who visit communities

Some countries or projects have trained workers to work in a number of communities.

- Midwives in Burma and assistant nurse midwives in India and other countries do continual rounds of home visits.

- In Costa Rica, auxiliary nurses based in clinics conduct home visits in the area within a five kilometer radius of the clinic. Male rural health assistants do the rounds of home visiting in areas beyond five kilometers of the facility. In this way every family is visited several times a year.

In comparison with using community-based workers, this strategy is more advantageous in that the visiting worker is apt to be better trained and have better referral connections than a community-based worker, but less advantageous in that the worker may not identify as closely with the community and will not maintain a constant presence there.

*In fact, literacy is not required for health workers who carry out many maternal health interventions. (304)

*Mobile units have characteristics both of facilities and of community-level services, so they are mentioned in both sections.

Community health workers

Community health workers (CHWs) can be either salaried, community-financed, or work as volunteers. They can work part-time or full-time. They normally have curative, preventive, and promotive responsibilities. CHW training usually lasts from one week to nine months. Like community health leaders, CHWs are usually selected from the community and hence should identify with it.

The ability of CHWs to affect maternal health is frequently limited by their personal characteristics, as well as by their lack of knowledge and program support. Women are frequently reluctant or socially prohibited from receiving services from male CHWs or young, unmarried female health workers. In many places, most women will not seek care from such CHWs except in emergencies.

A study of 52 primary health care projects (246) found such problems mentioned in projects in Bolivia, Sudan, Afghanistan, and other countries. In the Lampang Project in Thailand, however, male CHWs were found to be well-accepted as providers of maternal and child health and family planning services, which illustrates that all such generalizations are culture-specific. Some of the programs studied found that women may be more available than male health workers in places where women stay at home during the day while men work in

the fields. In a project in Honduras, for example, the wives of the CHWs sometimes provided medical care while their husbands were away at work. Obviously, this situation does not occur where women carry out much of the agricultural work.

Use of female health workers may have some disadvantages as well as advantages. For example, in many societies, most notably in Muslim-dominated areas, female workers' home visits and travel are severely restricted. Also for cultural reasons, male health workers may be more effective in organizing preventive work that involves community mobilization, such as building latrines or small water systems.

In order to avoid the problem of female clients not wishing to receive services from male health workers, some governments (e.g., Senegal, Niger, Liberia, and the Maldives) are training teams of health workers that include a traditional birth attendant who is responsible primarily for maternal and child health care.

Community health leaders

Community health leaders, usually trained for a week or less, have been used by many projects to help improve maternal health through preventive and promotive actions. Always selected from among community residents, community health leaders normally are not paid, and if they are paid, they receive only a token amount. Some examples of their use are the following:



Trained midwives in Burma visit mothers. ICF 7320. S.N. Pombejr

- The government of Turkey has a program for motivating and training village leaders to become health and family planning promoters.

- In the Yonsei Project in Korea, village housewives selected by their communities were trained in an initial three-week course and in inservice classes to be family health workers (FHWs)—mediators and communicators between the traditional Asian community and the modern health care system. FHWs make twice-monthly visits in their communities and hold weekly health post consultations, usually at their homes. Their functions include case finding, referral, follow-up, and health education in maternal and child health, family planning, and tuberculosis care. Additionally, they collect and record vital statistics.

- The Sarvodaya movement in Sri Lanka trains village volunteers to develop a community kitchen, including a small garden and compost pit; safe water; food storage facilities; and a toilet for training children. Most volunteers are women, 18 to 25 years old. Some volunteers receive additional training for work beyond their own communities. They then become responsible for community health services in ten villages, motivating mothers to get their children immunized and pregnant women to attend maternal and child health clinics, giving nutrition education, and activating projects aimed at improving sanitation.

- *Responsables de salud* play an important role in the Community Medicine Program in San Ramon, Costa Rica. These volunteers are a heterogeneous group selected by their communities; about a third are housewives. They receive one week of training at the project headquarters and frequent inservice education and on-site supervision. Their work in improving maternal health consists mostly of giving health education, referring and sometimes accompanying patients to community health posts or a hospital, distributing powdered milk at community health posts and homes, and playing an active role in community participation in the overall health program.

- In Thailand, health communicators are selected by their fellow villagers to serve as health educators and health mobilizers for about 15 households. They are given brief initial training and work under the supervision of CHWs. In Ubon Ratchathani Province, housewife leaders act as family planning volunteers, providing not only family planning services but also maternal health education. These volunteers help the local health officers carry out the government's maternal and child health program.

Traditional birth attendants

Traditional birth attendants (TBAs) are community members, usually women, who attend births to fulfill rituals and who generally have picked up some delivery skills by apprenticeship training. They are recognized as having special expertise for providing delivery and/or immediate post-delivery assistance. It is commonly estimated that TBAs assist 60 to 80 percent of births in most developing countries. While these figures can be disputed*, it is likely that TBAs attend at least half of the births. Figure 2 summarizes the basic characteristics of TBAs in developing countries.

Because the basic problem with existing maternal health services is their failure to reach more than a small portion of women who need them, a logical strategy for improving maternal health is to utilize health workers who are already providing services to women in most communities. Where TBAs are important sources of maternal care, there has been a great deal of interest in training them to improve maternal health.

Particularly where they have not had a lot of contact with TBAs, medical professionals often look down upon TBAs as dangerous quacks. Although some TBAs and some TBA practices clearly threaten maternal health, TBAs may serve women's needs better than trained doctors in some ways—typically in emotional support and in allowing delivery in the more natural squatting or upright positions.

Training TBAs should at least be *considered* as part of any strategy to improve maternal health. Six possible strategies for dealing with traditional midwives are:

1. Ignore them
2. Work with them informally
3. Upgrade them by teaching sterile techniques, referral practices, and so forth
4. Upgrade them and give them new tasks which they have not previously performed, such as immunizations
5. Recruit them and train them as formal village health workers
6. Professionalize them and give them certificates.

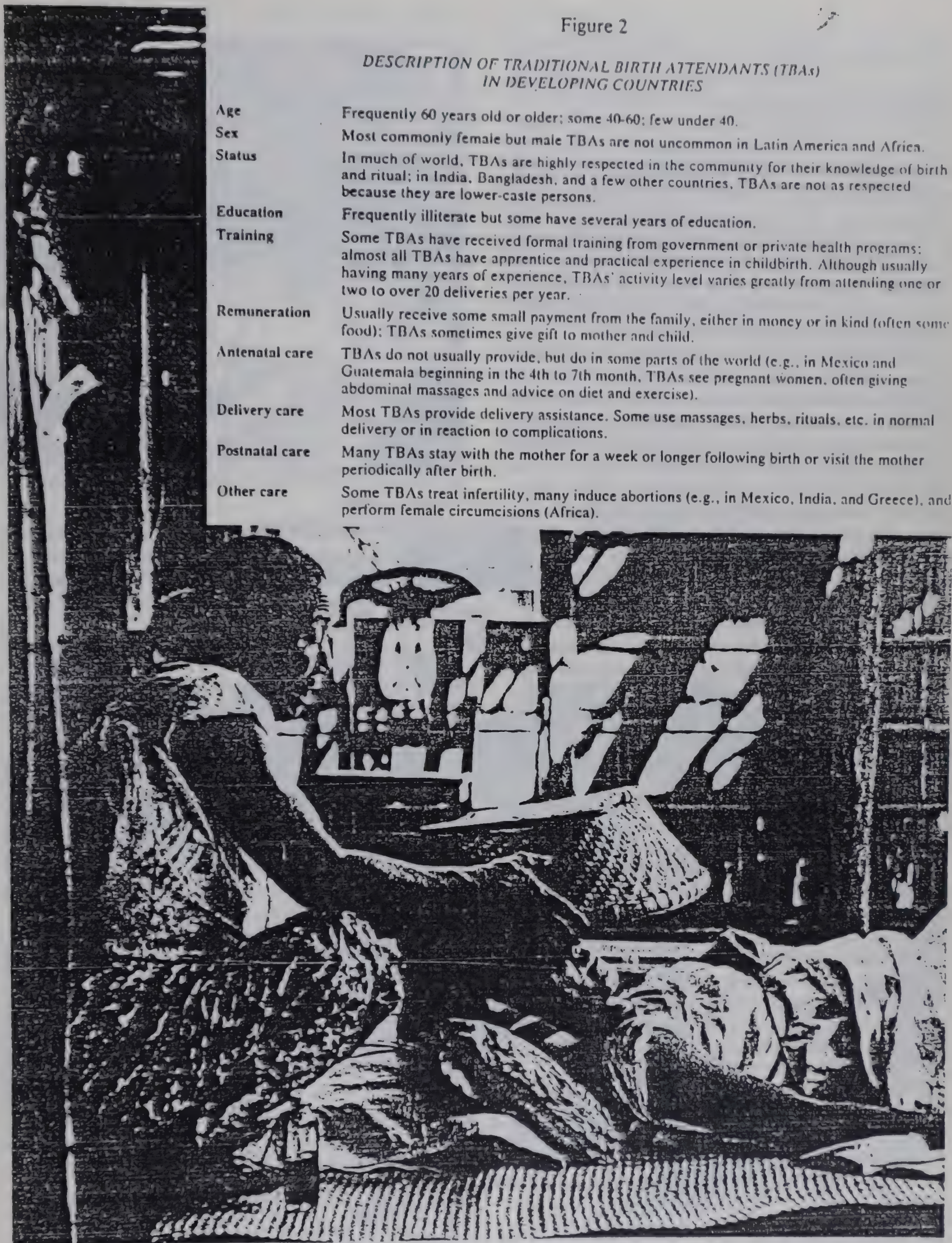
Each of these alternatives may be appropriate in specific circumstances. (303)

*Some experienced observers feel that the actual percentage is lower because relatives such as mothers-in-law and grandmothers attend many births. Also, in some areas, such as parts of Mozambique and Indonesia, it is the custom for women to give birth unattended. In these cases, a TBA may arrive *after* the mother gives birth.

Figure 2

DESCRIPTION OF TRADITIONAL BIRTH ATTENDANTS (TBAs)
IN DEVELOPING COUNTRIES

Age	Frequently 60 years old or older; some 40-60; few under 40.
Sex	Most commonly female but male TBAs are not uncommon in Latin America and Africa.
Status	In much of world, TBAs are highly respected in the community for their knowledge of birth and ritual; in India, Bangladesh, and a few other countries, TBAs are not as respected because they are lower-caste persons.
Education	Frequently illiterate but some have several years of education.
Training	Some TBAs have received formal training from government or private health programs; almost all TBAs have apprentice and practical experience in childbirth. Although usually having many years of experience, TBAs' activity level varies greatly from attending one or two to over 20 deliveries per year.
Remuneration	Usually receive some small payment from the family, either in money or in kind (often some food); TBAs sometimes give gift to mother and child.
Antenatal care	TBAs do not usually provide, but do in some parts of the world (e.g., in Mexico and Guatemala beginning in the 4th to 7th month, TBAs see pregnant women, often giving abdominal massages and advice on diet and exercise).
Delivery care	Most TBAs provide delivery assistance. Some use massages, herbs, rituals, etc. in normal delivery or in reaction to complications.
Postnatal care	Many TBAs stay with the mother for a week or longer following birth or visit the mother periodically after birth.
Other care	Some TBAs treat infertility, many induce abortions (e.g., in Mexico, India, and Greece), and perform female circumcisions (Africa).



A TBA in the Philippines performs a ritual as part of childbirth attendance. WHO/12024, D. Whitney

The decision on whether and how to train the TBAs depends on such factors as the extent and nature of local maternal health problems, the status and activities of TBAs, their willingness to be trained, and the cost-effectiveness of alternative strategies of improving maternal health. Where TBAs attend most of the births and the government is willing to put sufficient planning and funds into TBA training and support, this can be an effective method of improving maternal health. Training without follow-up support, however, may constitute a waste of valuable health resources. Projects cannot short cut the need for a supportive infrastructure by training isolated TBAs.

A consulting team that visited the Danfa Project in Ghana gave five reasons for the apparent success of the TBA component of the project. The first was that TBAs were given new training in only a small number of subject areas and most of the training built on skills that they already had. Village health workers, on the other hand, were given a large number of new skills, and they were apparently not able to assimilate all of them. The second factor was supplies: supplying TBAs was no problem since most of their supplies were locally available. The third factor was supervision: TBAs had a single supervisor, a community health nurse, while the village health workers had multiple supervisors. Payment was another factor: the health workers expected more, while the midwives depended upon their traditional sources. Finally, a major factor was that TBAs tended to hold their post for a lifetime, while health workers stayed on the job for only a short time before moving on to the capital city or to other employment. (303)

Among a group of, say, 20 TBAs from one area, there is apt to be a great deal of variation in their reputation, knowledge, skills, and practices, even though their personal characteristics may or may not be similar. The important lesson to note, therefore, is that *anyone who considers training TBAs must thoroughly study the TBAs being considered for training*. This study should cover TBAs' status, the number of births TBAs attend; their knowledge, attitudes, and practices; the health system's ability to support TBAs; and any legal restrictions on TBAs. If TBAs are to be trained, their useful practices should be encouraged, neutral ones ignored, and negative ones strongly discouraged.

For effective use of TBAs, there must also be careful planning and execution of TBA training itself, with sufficient care to make the location, duration, and scheduling of training, and the trainers and their methods appropriate for the often illiterate TBAs; regular inservice training; supervision for the purposes of retraining, resupplying, and remotivating the TBAs to use hygienic techniques and to refer problem cases.



In India, a traditional midwife examines a mother-to-be. WHO/17726, A.S. Kochar

Appendix A provides additional information on TBAs' role in improving maternal health, including descriptions of appropriate audiovisual aids, patient records, and other forms for illiterate TBAs that have been developed by some programs.

Mothers and other community members

Mothers and other community members can do a great deal to affect their own health. Generally, the more basic education a mother has, the more knowledge she will have about healthful practices. However, programs can overcome the lack of basic education and make an impact on mothers' health knowledge and behavior. Strategies for educating mothers include conducting home visits, talking to individual mothers or groups of mothers when they visit health facilities, organizing mothers' clubs and other group meetings, and using mass media such as radio. Mothers can learn about proper nutrition; about signs that indicate a normal pregnancy; about bleeding and other signs for which they should seek medical attention; about when they are in labor and should call for assistance; about services that are available; about the need to stop smoking and consuming alcohol when they are pregnant, and about treating themselves for simple health problems, such as heartburn, during pregnancy.

- In Shanghai, China, health staff teach mothers and fathers to monitor fetal movements and to detect signs of fetal distress during the last few weeks of pregnancy.
- In a rural health project in Puno Department, Peru, the project staff discovered that husbands assist many of the births, so the staff has begun giving courses for young husbands.

- In the Yonsei Community Health Teaching Project in Korea, education about pregnancy and childbirth is directed not only to the mother but also to the mother-in-law (who often attends the birth), the husband, and the community in general.
- The district health officers' manual in Papua New Guinea contains instructions for training mothers in self care to improve their own health. (15)
- In India and Bangladesh, community-based women-to-women networks effectively provide family planning information, supplies, and follow-up support.
- Mothers' clubs in Korea and Indonesia actively provide family planning and other maternal and child health care.
- In Western Samoa, almost every woman is a member of a women's committee. District nurses sent by the health agencies visit a group of villages regularly and attend the women's committee meetings. Health talks have become an integral part of activities and enable nurses to introduce and teach primary health care con-

cepts and birth control. Small groups of women are trained to weigh babies, carry out immunizations, and refer cases to regional medical facilities.

- The Zimbabwe Red Cross Society has trained more than 10,000 women since 1969 at its Westwood Training Centre near Harare. In learning about family health, participants are taught how to feed their families adequately and how to supplement vegetable gardening and raise domestic animals.
- The Indo-Dutch Project for Child Welfare in India invites all local women with at least a fifth grade education (up to 20 to 25 women per course) to a 40-day training program for village health agents.
- In the Mennonites' Indian Health Program in Paraguay, pregnant mothers join a club to discuss health and nutrition and learn to sew infant's clothes.
- In Thailand's five-year maternal and child health program, village development committees choose "model mothers" whom other mothers are encouraged to emulate.



At a mother's club meeting in Tanzania, mothers learn to use patterns for making clothing for themselves and their children. ICEF 4002, G. Holton

Planning and Monitoring Maternal Health Services

Various types of maternal health services (prevention, screening, and treatment and referral) were described in Chapter 2. This final chapter steps back to examine how a health planner—constrained by limited financial, personnel, and physical resources—can best organize these services.

Planning maternal health services is a challenging task. Planners face not only the common constraints of insufficient and poor quality data, limited funds, and other health priorities competing for funds, but also the complexity of maternal health problems and solutions, which are intertwined with poverty, women's low status, poor child health, and other factors. Figure 3 illustrates some of these complexities for one cluster of maternal health problems: mortality from obstetrical complications.

QUESTIONS FOR PLANNERS

Planners must make a series of decisions. These include:

1. In what parts of the country or in which communities should the program be active?
2. What types of services should be present at each level of the health system?
3. What specific services should be offered at the community level?
4. What individual women should receive particular services?

Program Location. Planners can decide to establish services either where they are most needed or where they are most likely to succeed because of logistical support, complementary resources, and local enthusiasm. If selection of communities is made on the basis of need, the at-risk concept can be very helpful. Communities selected to receive priority attention are those at highest risk of having priority health problems; for example, these might include communities with high infant mortality rates, low average family incomes, and low immunization coverage rates.

Levels of Services. If funds were unlimited, services could be offered to all women by specialist physicians at sophisticated hospitals. Since this is never the case, the risk approach advocates that appropriate services, facilities, and personnel should be available at each level, e.g., community, health post, health center, small hospital, or referral hospital. Services at each level should prevent or cure health problems occurring at or

referred to that level. If personnel at a particular level cannot treat a problem, they at least should identify the problem and refer it to the next level. At the community and health-post levels, where all problems should be addressed initially, this means training and supporting workers to provide simple, low-cost preventive services and to screen and refer cases needing additional care.

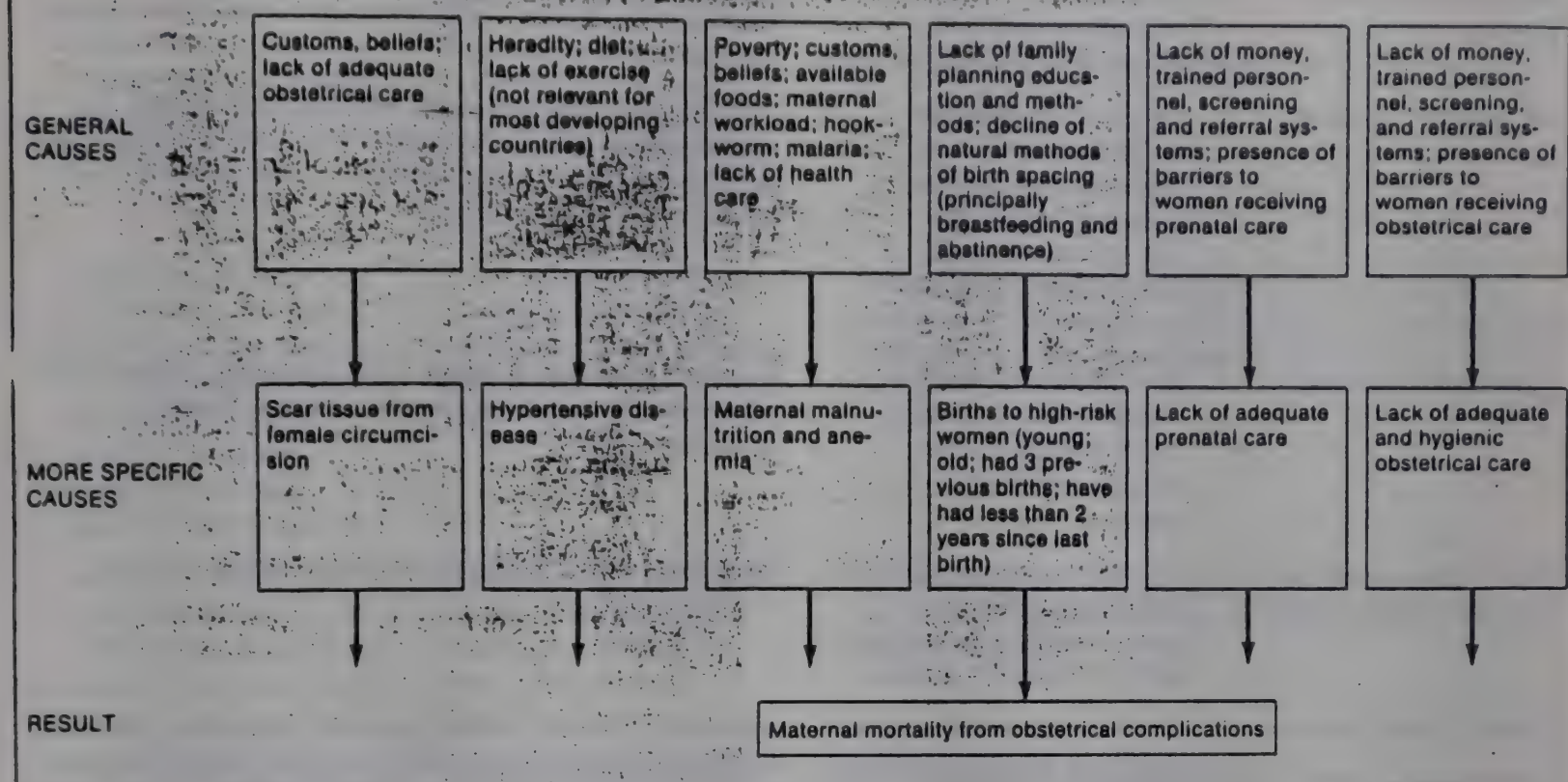
Community-level Interventions. In deciding what actions a particular program should take to improve maternal health, planners must look at the problems along with the effectiveness and feasibility of implementing alternative interventions. Gauging the extent and severity of maternal health problems is the first step in planning interventions. Medical personnel, anthropologists, statisticians, and others can assist in carrying out some of the methods listed in Chart 5 below. The findings of such studies should aid planners both in evaluating health problems and in determining the most important risk factors for health workers to identify. It is most important to identify underlying social and medical causes along with the extent and prevalence of the problems.

Certain interventions can be almost 100 percent effective—for example, tetanus toxoid immunizations given on schedule and using unspoiled vaccine. Other interventions may have limited effects in particular circumstances. For example, the effect of food supplements for mothers may be quite limited if the supplements are not targeted to the most severely undernourished women. Chapter 2 discussed the effectiveness of some basic interventions to improve maternal health.

The feasibility of implementation should also be considered in selecting from among maternal health interventions. Feasibility is very situation-specific. It incorporates policy-makers' acceptance and support; current coverage of the health care network; the managerial complexity of the intervention compared to the existing managerial capacity of the health system; the personnel needed to conduct the intervention compared to personnel already in place; the community participation desirable and the feasibility of achieving it; and the resources required, including the cost and ease of obtaining them.

Some specific questions that should be considered in selecting interventions are listed in Chart 6. These questions can also be asked after services are active in order to monitor their progress.

Figure 3: SELECTED CAUSES OF ONE MATERNAL HEALTH PROBLEM



Individuals. The at-risk concept for individual women is discussed in Chapter 2. As noted, the establishment of at-risk criteria results from the interplay of resources/feasibility of treatment or referral with locally important risk factors.

PREVENTION VS. CURE

Generally, preventive actions taken at the community level have the most effect on the widest range of health problems. These actions include providing family planning services; screening pregnant women for high-risk conditions which can be treated or referred; improving maternal nutritional status through appropriate and cost-effective means; giving tetanus immunizations; and providing hygienic birth care assisted by persons who recognize and can refer cases with serious complications.

Although logically the majority of funds should go to such preventive actions, this rarely happens in practice. Curative-oriented hospitals and physicians domi-

nate decision-making in many countries. Moreover, popular demand is for curative care, and almost everyone agrees that existing health problems cannot be ignored.

It is important to realize that though very cost-effective, preventive services are by no means inexpensive or easy to manage. To be effective, all maternal health interventions require support such as training, supervision, and supplies. Training TBAs, for example, might appear to be a quick, easy, and relatively inexpensive way of improving maternal health. Yet, to be effective, trained TBAs need support systems to resupply delivery kits, and to provide supervision and inservice education. In addition, a thorough study of TBAs should be conducted before training begins. As stated in the introduction to this paper, while various simple interventions may have dramatic impacts on a limited scale, there simply are no magic bullets—cheap, easy, and effective ways of improving maternal health on a large-scale, public-health level.

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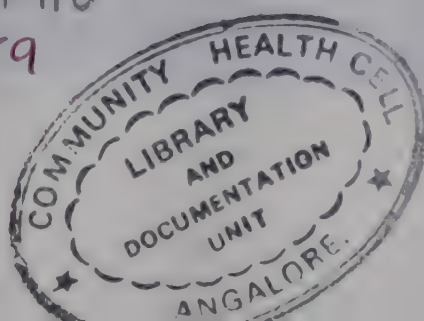


Chart 5: INFORMATION SOURCES FOR MATERNAL HEALTH ACTIVITIES

Type	Description	Information Provided
National morbidity, mortality and fertility statistics	Results of vital registration and epidemiological surveillance	Birth rates, mortality rates, incidence rates for reportable diseases
Clinic and hospital records	Compilation of periodic reports, sometimes converted to coverage rates	Data on patients seen at specific institutions, e.g., number of prenatal visits, tetanus immunizations given, babies delivered
"Scientific" surveys	Large, often national studies, based on scientifically-selected samples, elaborate questionnaires, and automated statistical analyses	Fertility and mortality rates; socioeconomic and demographic characteristics of population; limited data on knowledge, attitudes, and practices towards child spacing and maternal health
Community surveys	Studies by community health workers, school children, and others, usually intended for local use only	In-depth information about local practices, beliefs, etc. Also information about specific families needing attention
Direct observation and routine communication	Managers learning during field visits, through conversation with trainees, staff, community leaders	Information on traditional practices, desire for new activities, etc.
Maternal death audits	Confidential investigations involving relatives, the birth attendant, perhaps community representatives and a physician	Analysis of factors leading to death, including medical, economic, cultural, and health services considerations



A prenatal exam. WHO/12552,
D. Henrioud

<i>Advantages</i>	<i>Disadvantages</i>	<i>Comments</i>
Data may be already available	Data may be of poor quality and inadequate for specific regions, causes of death, and socioeconomic groups	Must be used as a starting point but will have to be supplemented
Data already available, usually more localized and specific than vital statistics	Represent only cases reaching institutions, whereas the unserved population is likely to be more important for new programming	Should be studied, but again only as a starting point
Usually more accurate and detailed than vital records; unlike service statistics, they represent the total population; good for baseline measurement and analysis of change	Costly, slow to produce results, superficial in comparison with methods discussed below	Results should be used wherever they are already available; new surveys should only be undertaken after other information sources have been fully exploited
Information gathering links health worker and community; information can be put to immediate use	Data generally inadequate for planning above the community level or for measuring change	An essential information source for community activities; those interviewed should include mothers, fathers, and TBAs
Information can be put to immediate use, links manager to community and staff	Information likely to be partial and somewhat biased; not useful for measuring change	An essential managerial function, though inadequate by itself
Educates everyone involved to modify future behavior	Technique may initially be difficult and threatening	Purposes must be understood to be educational rather than punitive



Chart 6: QUESTIONS FOR SELECTING INTERVENTIONS

Need

What are the maternal and neonatal health problems?
 How severe and prevalent are these problems?
 What problems concern people in general and expectant parents in particular?
 What problems concern health personnel most?
 What are the immediate and secondary causes of these problems?
 Which problems should receive priority attention? For each problem, what is the cost, in terms of maternal and neonatal mortality, of doing nothing?
 What is the situation of births and related problems?

- number
- percent below 2,500 grams (the cut-off for low birth weight)
- percent attended by TBAs
- percent attended by trained midwives
- percent occurring in facility
- percent not planned
- neonatal mortality rate
- percent with birth complications, by type
- maternal mortality rate

Feasibility

What actions are now being taken to improve maternal health? What have been their problems and achievements? What lessons have been learned?
 What alternative actions can the program take for each maternal health problem?
 Which actions should have an impact on more than one problem?
 Information on personnel and facilities (number, distribution, coverage, competencies)

- maternity beds
- traditional birth attendants—untrained
- trained birth attendants
- quality of referral links

- capacity of logistical supply systems for key commodities (contraceptives, tetanus toxoid, iron folate pills, food supplements, childbirth supplies, scales)
 - community health workers and volunteers
 - percent protected by tetanus toxoid
 - percent receiving antenatal care
- What are the competencies and personnel needed and feasible at different levels to deal with the identified problems?
 What are the organizational and managerial requirements of alternative actions?
 What resources are required for each action and which of these resources exist?
 What resources can communities provide?
 What are the expected initial and recurrent costs of the alternative actions?
 What is the expected effectiveness of alternative actions?

Acceptance

What is the likely cultural reaction to each action?
 Who is the head of the family? What are men's perspectives on women? Do women control some, most, or all of the family's money? What times are convenient for women to seek services?
 What are the legal supports for

- therapeutic abortion
- maternity leave
- iodization of salt
- maternity care by non-medical personnel?

What are community knowledge, attitudes, and practices regarding:

- birth timing/spacing
- use of contraception
- maternal diet during prenatal and neonatal periods
- danger signals during pregnancy
- birthing
- circumcision?

Appendix A

Training Traditional Birth Attendants (TBAs) to Improve Maternal Health

Because in many countries TBAs remain the most popular provider of delivery care, training TBAs to provide safe and effective prenatal and delivery care is an attractive tactic for improving maternal health. Some medical professionals, however, feel that TBAs are dangerous and should be replaced as soon as feasible by professional birth attendants. A general appraisal of the safety and effectiveness of untrained TBAs and some experiences in training them are given below.

UNTRAINED TBAs AS HEALTH PROVIDERS

Use of aseptic (hygienic) techniques. TBAs usually tie the umbilical cord with thread, string, or plant fiber and then cut it with bamboo, a shell, broken glass, a knife, scissors, shears, a sickle, a trowel, or a razor. Many untrained TBAs pack the infant's umbilical stump with cow dung or some other traditional substance. These practices plus others may lead to neonatal tetanus.

Massages and other practices. Abdominal massage, particularly forceful massage and pushing during the early stage of delivery, is very dangerous, as are TBAs' abortion methods (e.g., vigorous massage in Malaysia and sticks of clay and cow dung inserted in Bangladesh). Some TBAs in Yemen do not cut the cord, so the baby will bleed and become "white." Some TBAs reach up into the birth canal in order to speed up a slow delivery or pull out the placenta that has not immediately followed the infant. This frequently leads to maternal infections and hemorrhaging which cause death if untreated.

Use of herbs and commercial drugs. This is of particular concern for drugs that increase the speed of labor, such as pitosin and oxytocin, which can be bought over the counter in some parts of the world, and which can lead to rupture of the uterus and prolonged contractions; and for analgesics (pain depressors) that can cause difficult respiration of the newborn.

A male midwife in Yucatan, Mexico, for example, receives a variety of injections, primarily vitamin preparations, but also the drug oxytocin from a physician. If one of the female midwives in the area is attending a woman whose labor is slow, she will call upon this male midwife to administer oxytocin injections. He is also known as an expert for the manual removal of the placenta and for dealing with malpresentations of the fetus such as shoulder-first presentation. (164)

On the other hand, some of the herbs and drugs TBAs use are harmless or even life-saving. Most TBAs have effective herbal drugs for the third stage of labor and to stop postpartum hemorrhage. Moreover, as one anthropologist notes, "The condemnation of [TBAs' use of] indigenous herbal medicines, while [critics are] using forms of oxytoxic agents, analgesics, and anaesthetics, which have unknown effects and some of which research is showing as harmful to the mother and fetus . . . is hypocritical, ethnocentric, and dangerous." (81)

Handling of complicated deliveries. While TBAs cannot successfully manage all delivery complications, many TBAs can handle some complications (see Figure 4). Many TBAs do recognize some danger signs and refer their patients to hospitals and other health facilities, if they are accessible.

In Indonesia, a system has been devised to encourage TBAs to identify pregnant women and refer them for prenatal checkups. The TBA gives the mother a chit with the TBA's name on it to take to the health center. Periodically, chits for each TBA are added up to find the one who has apparently referred the most women.

RECENT TRENDS IN TBA TRAINING

Despite some resistance from the medical profession, official acceptance of TBAs generally has been growing in recent years.* Although TBA practice is still considered illegal in some countries, most of these countries do not prosecute TBAs actively. For example, although they were illegal in Egypt in the 1970s, TBAs continued to be active there, even collaborating with government health staff in many cases. According to the World Health Organization (WHO), 71 percent of countries formally recognize the TBA in some way, but utilization of TBAs may not be part of the coordinated

*Interest in training and recognizing TBAs has occurred for a long time in some countries—since the 1920s in Sudan, and since the 1940s or 1950s in Peru, India, Thailand, Indonesia, and other countries.



TBAs in Indonesia learn how to wash their hands properly. Project Concern International

Figure 4: EXAMPLES OF HOW UNTRAINED TRADITIONAL BIRTH ATTENDANTS HANDLE OBSTETRICAL EMERGENCIES IN KIBWEZI, KENYA (227)

Prolonged labor	Give Omo (detergent) solution; give a massage; and tie a piece of cloth on the upper abdomen and manipulate the sides of the stomach to stimulate contractions
Presenting head too large	Stretch vaginal muscles with fingers; perform an episiotomy using a razor blade or their finger nails (help heal with water and ash solution; mother told to sit with legs together and to wash cut with warm salt water)
Malpresentation	Manipulate baby and deliver
Retained placenta	Massage abdomen; some TBAs insert washed hands and pull placenta out; some give drink (ground elephant skin with water or castor oil plant roots and water)
Postpartum hemorrhage	Give drink of Mutora tree roots and water; give chloroquine tablets while massaging with oil; pack vagina with clean cloths; tie a cloth around the abdomen

national strategy for primary health care. Of the 63 countries reporting to WHO in 1981, 52 (82 percent) reported that they had TBA training programs. However, most of these countries intend to replace TBAs with more formally trained health personnel as soon as they can afford to do so.

Some countries have very ambitious programs for expanding the roles of TBAs. These are discussed in WHO's *New Achievements with Traditional Birth Attendants* and *Traditional Birth Attendants: An Annotated Bibliography* (and supplements), as well as other publications.

There is a great deal of variation in the length, location, and nature of TBA training, but most TBA training programs last about one week to one month; are held in some health facility, often a health center; and are taught by nurses and doctors. WHO has recently developed a TBA trainers' kit which is being tested in some countries. (On TBA training, see Refs. 5, 11, 12, 13, 16, 19, 24, and others.)

The cost of TBA training varies greatly; for example, \$17 per TBA trained in Samoa, \$68 per TBA trained in Liberia, and \$93 per TBA trained in Nicaragua. The most effective TBA programs incur substantial support costs *after* initial training—for supervision, resupply, evaluation, and inservice training. Sometimes, a fairly large part of the TBA training costs are taken up by the costs of delivery kits that many TBAs receive.

UNICEF donates thousands of these kits each year to countries upon request. It is important to note that the content of these kits can be adapted to an individual country's needs, either by asking the UNICEF supply center in Copenhagen to assemble them according to a list provided by the government, or by assembling the kits in the country. The proposed composition of the kit should be carefully studied and, if possible, field-tested. In practice, programs that distribute kits to TBAs vary greatly in their ability to resupply kits and supervise their use. Imported or local materials given to TBAs can improve their birth hygiene, but success depends on good initial and follow-up training as well as on a good resupply system.

Various projects in India have supplied TBAs with such items as sterilized razor blades, cord ties, tincture of iodine, and a few pieces of cotton—all for less than one rupee. Each time she delivers a baby, the TBA is paid a small sum and her delivery kit is replenished. Experience has shown that it is best to collect and recycle used material in order to prevent unsterile equipment from being used again.

EVALUATION OF TBA TRAINING

Some TBA training programs appear to have been quite successful in improving TBAs' skills and ability to improve maternal health care. For example:

- An evaluation in India showed that trained TBAs registered more antenatal cases which led to an increased number of antenatal clinic visits, immunizations against tetanus, and deliveries attended by trained personnel.
- In Senegal, the Philippines, Haiti, and other places, TBA training has led to a substantial reduction in neonatal tetanus both because TBAs are referring more women for antenatal care and because they are using more hygienic techniques during deliveries.
- An evaluation of TBA training in Zambia showed improved recognition of risk and better performance.
- Postpartum hemorrhage and retained placenta are reported to have been eliminated as causes of maternal death and



A TBA receives her midwifery kit at her graduation ceremony. WHO/6710

anemia prevalence has been reduced through TBA training in the Raymah Health Project in Yemen.

- After TBA training in Ceara State, Brazil, there were no maternal deaths in 4,000 deliveries.

TBA training that is centrally planned and taught by medical professionals is frequently ineffective. Illiterate TBAs do not learn the same way as highly educated doctors and nurses. TBAs need much practice, discussions in their own language and dialect, and most importantly, recognition of their strongly held beliefs and knowledge. While government programs in Indonesia, Bangladesh, and other countries do provide these prerequisites, some other training programs do not.

The managerial challenges of TBA training and field support are great, and many TBA programs have encountered problems (see Figure 5). Frequent difficulties include a strong resistance on the part of the medical community towards encouraging the use or training of TBAs; inappropriate teaching methods; training that is too long and otherwise inconvenient to TBAs; highly educated trainers who cannot talk on the level of the TBAs; problems with supplying and resupplying items in the TBAs' delivery kits; failure of the trainers to understand and recognize the importance of folk practices and traditions; and the nonexistence or insufficiency of in-service training and supervision of TBAs after the initial training. All of these problems can and have been overcome in particular projects and countries. But avoiding or overcoming them

requires careful planning and possibly an investment of money larger than some projects plan for. In other words, training TBAs will not do much in the absence of basic health infrastructure.

Persons planning TBA training must make many decisions. What should one do, for example, when a survey shows that most of the TBAs attend only 5 to 10 births a year? Findings in Danfa, Ghana, typical of many areas, showed that TBAs there attended an average of 7 deliveries per year, with only 6 percent attending 20 or more deliveries per year. If funding were sufficient and other findings favored training TBAs, it would seem that all TBAs should be invited and given the opportunity to be trained, even if they are old or even if they only attend a few births a year. If funds are sufficient only for training a portion of the TBAs in an area, then it would seem most appropriate to train those first who attend the most deliveries. But even in this case, plans could be made to train the other TBAs later, in order to avoid jealousy and resentment.

Some programs have developed simplified forms and procedures for TBAs. For example,

- A form was devised in Afghanistan for illiterate TBAs to record patient information. (See Figure 6.)
- Indonesia is one of a few countries that have produced an illustrated manual for illiterate TBAs to keep and use for reference.

Figure 5: AN EVALUATION OF TRADITIONAL BIRTH ATTENDANT TRAINING IN PERU

Begun in 1945, TBA training in Peru was given sporadically in the 16 health regions from 1960–1979, and then on a national scale since 1979. A recent systematic evaluation of TBA training in Peru (90) yielded results that are instructive and probably typical of many national TBA training programs.

Positive findings included:

1. A marked difference in the quality of care provided by trained versus untrained birth attendants, particularly in rural areas.
2. Trained TBAs retain the information taught.
3. Trained TBAs expressed very few complaints about the program.
4. Trained TBAs were pleased with their new skills and felt that they were in a better position to provide service to their community.
5. Patients treated by trained TBAs were satisfied with the services they received and preferred to use the trained versus the untrained TBA.
6. Patients treated by trained TBAs tended to use more hygienic health practices than those treated by untrained TBAs.
7. Hygienic and nutritional counseling provided by trained TBAs was being utilized by their patients.

Problem areas identified in the study were:

A. Programming

1. Inadequate input from local level on program design
2. Insufficient analysis of community needs
3. Planning based on "supply" rather than "demand"
4. Neglect to prepare the community during planning

5. Inadequate coordination of program planning with local health officers
- #### B. Selection
1. Insufficient input from the community
 2. Lack of attention to the creation of incentives to insure participation of qualified candidates
- #### C. Training
1. Absence of previously trained TBAs on the training staff
 2. Insufficient attention to regional linguistic variation
 3. Faulty methods of instructing rural TBAs on referral forms
- #### D. Program Operation
1. Inefficient referral system
 2. Inefficient utilization of the trained TBA as a community health resource
 3. High rate of attrition of trained TBAs from program
 4. Lack of means of transporting critically ill patients to local health facilities
 5. Lack of incentives to motivate local mothers to utilize the trained TBA
 6. Need to inform local community of the presence of the trained TBA
- #### E. Supervision and Evaluation
1. Insufficient input from the local community on TBA supervision
 2. Lack of feedback on TBA performance to the local community
 3. No attempt to evaluate the performance of trained TBAs within the community. (Evaluation based on the number of TBAs trained and their performance on a written exam at the end of the training course.)

Figure 6: HOME VISIT FORM FOR ILLITERATE TBAs IN AFGHANISTAN

										Week Date							
#	Date	Malaria House Number	Family Name	Malaria	Tuberculosis	Diarrhea	Eye Disease	Pregnancy	High Risk Pregnancy	High Risk Child	Using Birth Control Pills	Using Birth Control Pills with 3 or more children	Not Using	Clean Water	Clean Latrine	Births in last 3 months	Deaths in last 3 months
81																	
82																	
83																	
84																	
Total																	

Key

Visit Number

☀ Date

🏠 Malaria House Number

👤 Family Name

🦟 Malaria

👤 Tuberculosis

💩 Diarrhea

👁 Eye Disease

👤 Pregnancy

👤 High Risk Pregnancy

👤 High Risk Child

1 Man

+ Woman

Δ Child

Δ Malnourished Child

👤 Using Birth Control Pills

👤 Using Birth Control Pills with 3 or more children

👤 Not Using

✓ Yes

✗ No

🚰 Clean Water

🚽 Clean Latrine

👶 Births in last 3 months

👶 Deaths in last 3 months

- In Bangladesh a referral system was based on different colored vouchers. White vouchers are used for routine referral of noncomplicated pregnancies, red vouchers for complicated pregnancies, blue vouchers for infant care referral to health subcenter, pink vouchers free for all routine postnatal patients, and green vouchers free for all to the family health unit of a health subcenter. The vouchers are composed of two parts. One part with a picture of the complaint is retained by the TBA while the other part, stating in capital letters the reason for the referral, is retained by the patient. A similar system is used in Sudan.

- In a program in Mexico, a system was set up so that cloth ties and razor blades for the umbilical cord were sterilized and placed in a baby food jar at the hospital. These jars with the cord supplies were then given to the TBA by an auxiliary nurse who worked in the area where the midwife worked. After each birth attended by a midwife, she would visit the auxiliary to be resupplied with a new jar with ties and a razor blade. This system both assures a more hygienic treatment of the umbilical cord and leads to more valid vital statistics.

since the local nurse can supervise the midwives filling out the statistical sheets.

- In the Tihama region of Yemen, TBAs conducted interviews with mothers using a pictorial questionnaire that captured crucial information on maternal history, desired family size, infant feeding practices, and mothers' health. This survey provided the first systematic information on these questions for the region, enabling planners to tailor program interventions to the people's real needs, attitudes, and behavior.

- In northern India, a pictorial record-keeping system is used among illiterate TBAs for recording important events during pregnancy, childbirth, and the neonatal period. TBAs are taught to record essential identifying information on the mother, the number of dead and living children, care provided during pregnancy, risk factors noted, presentation of the baby, breathing difficulty, and method of feeding. To fill out the cards, TBAs have to count to nine, use a pencil for making checks, measure the mother's height with a bamboo stick, and weigh the newborn using a spring-balance scale. Tests showed that TBAs were recording accurately.

NEW ROLES FOR TBAs

Programs in many places have attempted to use TBAs in new roles as family planning motivators, and as distributors of contraceptives and basic preventive and curative medicines such as iron/folate pills, oral rehydration salts, and medicine for intestinal parasites. Some programs are creating or expanding TBAs' roles in antenatal care. Many TBAs are being trained to refer high-risk pregnant women.

Programs in many countries have tried to give TBAs family planning responsibilities, either for motivating clients to go to a health facility for family planning assistance, or for actually distributing contraceptives.⁽¹³⁾ These programs have had mixed success. Generally, they are most successful when they are carefully planned; when they begin with pilot projects and conduct careful surveys before expanding slowly; when supervision and resupply are carefully planned and implemented; and when TBAs are the only accessible source of contraceptive advice and supplies in isolated rural areas. In one example of a successful program in Malaysia, 200 TBAs trained between 1972 and 1978 recruited an average of three new acceptors per month and resupplied an average of 60 to 70 women per month with oral contraceptives. This amounted to 3 percent of all acceptors in the government's program. Experience in training TBAs for work in family planning may be summarized as follows:

- Middle East and Africa: There are relatively few programs in this area that train TBAs for work in family planning.
- Latin America: Many countries have trained TBAs for work in family planning, particularly for referring potential family

planning acceptors to clinics. Several countries—including Mexico, El Salvador, Guatemala, Haiti, and Nicaragua—also permit or plan to permit TBAs to distribute contraceptives.

- South Asia: India, Pakistan, and Bangladesh initiated national programs to use TBAs in family planning in the mid-1960s. These programs had limited success, however, in part due to the relatively low social status of TBAs in this part of the world.

- Southeast Asia: Indonesia, Malaysia, the Philippines, and Thailand have large and relatively successful projects to utilize TBAs in family planning.

In general, experience shows that new skills should not be added to TBA training without sufficient funding and well organized systems of supervision and resupply.* Programs can use TBAs for tasks outside of their traditional role if these prerequisites are met. Even in these cases, however, there is a real danger of overloading the TBAs, and any additional tasks should be very limited in number, carefully chosen, and added slowly over time.

*In an experiment in the Philippines in which TBAs acted as family planning recruiters, the cost per acceptor was U.S. \$1.04 for TBAs with training only; \$.58 per acceptor for TBAs with training and supervision; and \$3.62 per acceptor for TBAs with training, supervision, and incentive payments. The comparable cost in the government program was \$8.50 per acceptor. (210)



Using dolls and dummies, an instructor trains midwives and health workers in the Chiapas region of Mexico. ICF 8813, E. Danois

Appendix B

Mothers' Cards and Other Tools

The World Health Organization is in the process of testing a prototype home-based mother's record card that will overcome problems of institution-based maternal cards (incompleteness, poor quality, poor information flow) and that will initiate timely and appropriate interventions for problems identified, provide continuity of care throughout a woman's reproductive cycle, and establish a simple information system with linkages among various health care facilities. Besides encouraging the active participation of the mother in self-care, the card is intended as an educational tool both for the mother and the health worker.

The prototype card is a starting point for the design of more appropriate cards in the future. Each country has the flexibility of including specific local problems and risk factors important to its population. Of six panels on the card, one is for data and risk factors recognized from past history and three are to record events, including identification of risk factors during three pregnancies, deliveries, and postpartum periods. These panels also include essential information on the health status of the newborn during its first month of life. Another panel monitors progress before the first pregnancy and/or during inter-pregnancy (for a period of seven years), and the last panel records findings and recommendations of the referral center. WHO intends to test this prototype card in 10 to 12 countries.

The Bamaletse Lutheran Hospital in Botswana has developed an antenatal card that is 90 percent accurate in detecting at-risk mothers and fetuses and that tells a trained midwife at a glance the condition of the mother and fetus at any point during the pregnancy.⁽⁶¹⁾ The two-sided card contains information only on the most important aspects of pregnancy. One side is used to record pertinent medical data: menstrual history, the sequence and type of previous complications, and details of the present pregnancy, for example. Each factor that might lead to complications counts as a risk factor. For instance, if a pregnant woman is younger than 15 or older than 30 years of age, she "scores" one point. For every answer there is either a box to check or, as in the case of the estimated date of delivery, a space to write in the information. The midwife adds up the points. Based on the score, she decides how to counsel the mother. In cases of great risk, the midwife decides whether to refer the patient to a clinic or hospital. (Botswana has an extensive network of clinics and hospitals.)

On the other side of the card is a graph used to trace the increase in the height of the symphysis-fundus (the space of the mother's abdomen taken up by the fetus). A solid guideline traced on the graph shows the expected growth pattern. If pregnant women are checked regularly, any abdominal pattern should become clear. A high score suggests twins or a complication such as fluid retention or high blood pressure. A score below three points suggests intrauterine growth retardation.

In the case of suspected retardation, the patient helps do a further check by doing a "kick count." From sunrise, the mother counts the first 10 kicks of the fetus and notes the approximate time of day, for example, "about noon." If the tenth kick comes later and later each day, it suggests the fetus is in danger and the mother needs referral for further assessment.

The original card, which was quite complicated, is now being simplified and is being adopted by the government of Botswana. At the hospital, perinatal mortality rates have fallen dramatically since the card was introduced.

The Kasa Model Integrated Mother-Child Health and Nutrition Project in Maharashtra, India has developed a mother's card that is different in that it covers four pregnancies but does not record the fundus height. ⁽²⁹⁵⁾ In that project, 27 part-time social workers with relatively limited schooling were able to fill out over 5,000 cards each month, relating to about 88 percent of the eligible women in 60 villages covered by the project. It is important to note that these cards were filled in for as many women as possible of reproductive age rather than for pregnant women specifically. The cost of each card and a duplicate in a plastic bag that was given to the mother (the cards were expected to serve 10 years or longer) was U.S. \$0.15.

Other tools

Several management tools have been developed by programs to facilitate maternal health services reaching appropriate women. One of these tools is the community map. In the Community Medicine Program in San Ramon, Costa Rica, auxiliary nurses who work out of community health posts maintain large and colorful maps of their communities. Every house and building is numbered and the following are indicated by color-coded symbols: churches, schools, health posts, sawmills, stores, coffee warehouses, sugar mills, repair shops, coffee fields and processing areas, milking stations, and cemeteries. Pins, with color-coded heads, are used to indicate where there are pregnant women, high-risk pregnancies, newborns, high-risk newborns, chronic illnesses, poor families, environmental sanitation problems, and hepatitis cases. The Ministry of Health in Costa Rica has adapted this excellent graphic tool for health posts nationwide.

Another useful tool is the tickler file. Tickler files are simply individualized mothers' files that are filed in a box by week or month that indicate when the mother should return for ante- or postnatal care. Women who miss their appointments can then be visited at home. The difficulty, of course, is in identifying the pregnant women in the first place and encouraging them to come in for antenatal care.

Appendix C

PROGRAMS TO IMPROVE MATERNAL HEALTH

AFGHANISTAN/National Dai Training Program, Ministry of Public Health, Kabul, Democratic Republic of Afghanistan

General Project Description: Begun in 1977, the National Dai Training Program had trained approximately 700 traditional birth attendants (dais) by the end of 1978. Funds for the program were jointly provided by the U.N. Fund for Population Activities (UNFPA), the U.N. Children's Fund (UNICEF), the U.S. Agency for International Development (USAID), and the Afghan government. Expansion of the skills of these untrained traditional midwives enabled many women in rural villages to receive basic medical care for the first time, since the culture prohibited them from traveling to the Basic Health Center (BHC) or from being examined by a male (in 1977 only around 29 percent of BHCs had female workers). By the end of 1978, the training of dais had been initiated in four of Afghanistan's six provinces. The dais' provision of maternal and child health care was complemented by the male village health workers (VHWs) trained to provide simple curative medicine, environmental health information, immunizations, and health education. Together they formed a team to provide basic health care in the mountainous rural areas where 80 percent of the population dwells. Reports concerning the status of health personnel training after the political upheaval in 1979 are sketchy; however, it appears that most training has been phased out with the exception of the Auxiliary Nurse Midwife Training School in Kabul.

Maternal Health Problems and Interventions: The health profile of mothers and children is characterized by high morbidity and mortality due to malnutrition, infectious diseases, inadequate prenatal and obstetrical care, hazardous cultural practices associated with childbirth and infant care, and closely spaced pregnancies. It is estimated that 30 percent of children between the ages of two and three suffer from severe malnutrition, and the mortality rate among women of childbearing age is 118 per 1,000 pregnancies. The basic health care network reaches only a few miles from the cities, and tradition bars access to male health workers who might reach isolated areas. The dais, who were free to visit homes to practice traditional health care, were trained to recognize and refer high-risk pregnancies; provide hygienic delivery care; give prenatal, postpartum, and postnatal care; detect and treat minor childhood illnesses; and refer serious cases to other medical services.

Lessons Learned/Innovations Used: This program illustrates that cultural constraints need not bar the provision of health services to previously excluded populations. Through the choice of appropriate, culturally acceptable providers, services can be expanded to reach otherwise unserved populations. The dais seven-week training program took place outside their respective villages, leading to concern among male leaders that the women be protected and shielded from contact with men. The solution to this concern, houses rented by the program, not only made the training acceptable, but also augmented nutrition lessons through the interaction of trainers and trainees in the process of shopping and cooking together.

BANGLADESH/Family Planning-Health Services Project, International Centre for the Control of Diarrhoeal Diseases, Bangladesh, G.P.O. Box 128, Dhaka-2, Bangladesh

Beginning in 1975 as simple household distribution of oral contraceptives and condoms by lady village workers (LVWs) in 70 densely populated, rural villages in Matlab, Bangladesh, this project has evolved into an effort to provide selected maternal and child health services as well as a wide range of family planning services. In 1977, the Cholera Research Laboratory (now the International Centre for Diarrhoeal Disease Research, Bangladesh) evaluated its contraceptive distribution activity. It decided that a fuller range of contraceptives, delivered by better trained and supervised fieldworkers with stronger medical backstopping, was necessary to serve adequately the unmet need for services. Maternal and child health services were added to the distribution system to provide an appropriate mix of services promoting health for the family.

LVWs, who were mostly elderly, widowed, and illiterate, were replaced by female village workers (FVWs) who were educated through grade 6, married with children, and had personal contraceptive experience and higher standing in the community. Each FVW covers a population of about 200 families and visits each family every two weeks for motivation, health education, and resupply. The FVW is supported technically and supervised by one male senior field assistant and one lady family planning visitor. Through the maintenance of regular contact with families, increased opportunities are created to discuss family planning and maternal and child health needs and problems. Timely intervention is also enhanced.

Maternal Health Problems and Interventions: The FVWs guide mothers concerning proper nutrition during pregnancy and lactation and advise them regarding infant and child nutrition. Information on nutritional practices during breastfeeding and weaning is included. Appropriate hygiene during pregnancy, delivery, and the neonatal period is stressed, and tetanus toxoid is provided during the antenatal period. During their last three months of pregnancy, all women are supplied with iron and folic acid. FVWs also instruct groups of 10 to 20 mothers in the preparation of oral rehydration solution for treatment of diarrhea. Fieldworkers are brought together once a week for in-service training and are gradually introduced to new topics for health education.

Lessons Learned/Innovations Used: This project was introduced in an area in which the Cholera Research Laboratory had established a presence since 1963. The LVWs who distributed contraceptives during the initial phase of the project had collected vital information about diarrhea and supplied a simple remedy for it to families for eight to ten years. However, given the low social status of the LVWs, their limited training, and personal inexperience with methods, women in the community did not turn to them for advice concerning the proper use of contraceptives and management of problems. The decision to upgrade field personnel, training, and infrastructure, as well as to increase the kinds of contraceptives available, while more costly initially, produced significant increases in contraceptive continuation and allowed the addition of important maternal and child health services at an incremental cost.

BOLIVIA/Foster Parents Plan (Plan de Padrinos), Casilla 6181, Correo Central, La Paz, Bolivia

General Project Description: In 1969, Foster Parents Plan International ("the Plan") began various programs in La Paz' squatter neighborhoods that were largely unattended by government services. Though at first only curative health services were offered, the Plan initiated preventive MCH activities in 1973. Besides its health programs, the Plan sponsors a day-care center, literacy and vocational classes, a savings and loan cooperative, and a multi-purpose cooperative. Auxiliary nurses, with nine months of training in nursing and three in public health, serve as the principal health workers. They visit families frequently to teach, evaluate progress, detect problems, and schedule visits for additional care. Four staff doctors give educational talks in the neighborhoods at night, and films, slides, and talks are presented daily to people waiting for their appointments. Social workers provide family counseling and help in organizing community groups. Community participation has been critical to the Plan's success. The project has trained numerous community leaders and established 37 community groups, ten of which had achieved independence from the Plan's assistance by 1978.

Maternal Health Problems and Interventions: The Plan gives top priority to its maternal and child health program. A high birth rate, high maternal mortality rate, and extremely high rates of illegal abortions point up the need for pre- and postnatal services. Legal restrictions prevent family planning services from being part of the program. Massive educational efforts urge mothers to use inexpensive, nutritious foods. Mothers are taught personal and infant hygiene and care. Auxiliary nurses and other project staff give prenatal and well-baby care through medical consultations, detection of infections, and education on topics such as maternal nutrition, hygiene, good health habits, and the benefits of hospital births in diminishing maternal and infant mortality. Auxiliary nurses make frequent home visits during the first six weeks after delivery. Mothers are encouraged to bring their children to well-baby clinics. Although mothers are encouraged to give birth in a Ministry of Health maternity hospital, many births take place in the home, so the plan has begun giving classes to some of the midwives who attend home births. Women are checked for venereal disease during prenatal examinations; however, due to lack of cooperation from men, venereal disease treatment is the one program which has achieved little progress.

Lessons Learned/Innovations Used: Member families of the Plan pay U.S. \$.50 per month. Although Plan health services are otherwise free, people pay a portion of their referral service charges according to their ability to pay. The plan emphasizes education, prevention, and outreach services. Lessons, given in daily talks at the plan headquarters, medical consultations with doctors and nurses, home visits, mothers' club meetings, neighborhood talks by doctors, and community development meetings with social workers are mutually reinforcing. The plan's comprehensive approach to health programs and excellent stimulation of community participation have been keys to its success.

BRAZIL/Traditional Birth Attendant Training Project, Sociedade de Assistencia a Maternidade Escola Assis Chateaubriand, Universidade Federal de Ceará, Fortaleza, Ceará, Brasil

General Project Description: Concern regarding the number of rural women dying during childbirth led to the development in 1975 of a program to train traditional birth attendants (TBAs) and to establish maternity units in rural areas of Ceará state in northeast Brazil, the nation's poorest region. The project was designed to extend the services of the Assis Chateaubriand Teaching Maternity Hospital (MEAC)—one of the two free maternity hospitals in the state capital of Fortaleza—to rural areas. MEAC staff deliver about 8,000 women a year at the hospital.

Community leaders participate in the recruitment of local TBAs and provide vacant buildings to serve as small local obstetric units. Each unit contains an outpatient clinic, a delivery room, and a room with from two to seven beds for postpartum recovery. Local TBAs

are trained to assess risks prenatally, offer better care in home deliveries, and utilize delivery in the obstetric units when possible. By 1982, trained TBAs staffed 15 units. These local units are open 24 hours a day, seven days a week, and are supported by an ambulance and a driver to transfer complicated deliveries to the hospital. A team comprised of an obstetrician and a nurse visits the units once a week providing prenatal care and immunizations. The success of the program has led to a second effort to create one-bed units attached to TBAs' homes in more remote, sparsely populated areas. As of 1982, five one-bed units had been established and 20 more had been planned for 1983.

Maternal Health Problems and Interventions: The region's infant mortality rate (142 per 1,000 births) is higher than any other region in Brazil. In the rural areas, hospital deliveries account for about 59 percent of the total. Typical TBAs in this region are illiterate, middle-aged women, who have learned to handle deliveries through experience and observation, or through information passed down by their mothers or colleagues. TBAs recruited for the project are given a three-month course in basic obstetrics and in identification of high-risk cases for referral. The best TBAs are then assigned to the obstetrical unit, and others are sent back to their communities to practice and to refer high-risk patients. During the period from October 1980 to July 1981, when TBAs saw 1,881 women in the local units, no maternal deaths were recorded. TBAs referred 235 cases to the hospital, identifying them as high risk.

Lessons Learned/Innovations Used: Operating costs of the units range from U.S. \$200 to \$2,000 per month. Community response in providing the physical space for TBAs has been strong. Maternal and infant health services have been significantly upgraded in this area in a relatively short period of time at a reasonable cost, and requests for other health services such as vaccinations have been generated.

HAITI/Albert Schweitzer Hospital, P.O. Box 1744, Port-au-Prince, Haiti

General Project Description: The Albert Schweitzer Hospital has been providing maternal and child health services to a rural population of approximately 100,000 for the past 25 years. Various special services for mothers and children have been added over the years, especially since the opening of the hospital's Community Health Department in 1967. The hospital has extended its health services through dispensaries. These are managed by auxiliaries who are trained and supervised by the community health and hospital staff. Forty-four health agents work in conjunction with the auxiliaries, educating the hospital district's population and finding out what their health problems are. The hospital has organized, registered, and trained traditional birth attendants (TBAs) in the surrounding area. The majority of deliveries are attended by local midwives who are to refer mothers with difficulties to the hospital.

Maternal Health Problems and Interventions: Implementation of immunizations (especially tetanus toxoid), health surveillance, health education, and improved tuberculosis control activities have reduced the overall maternal and child morbidity and mortality in the hospital district. "Courtyard education" given by health educators at the hospital as well as in communities includes education for mothers on family health, general hygiene, tetanus, tuberculosis, and family planning. TBAs are taught sterile techniques of cutting the umbilical cord, and seminars have been held for pregnant mothers on the importance of sterile conditions during home deliveries. TBAs are also taught about health care for pregnant women, proper procedures during labor and delivery, and hygiene of the newborn. They are also provided with silver nitrate ampules for preventing gonococcal ophthalmia (blindness) in the newborn. Midwives are instructed in the importance of tetanus immunizations and are to refer women for immunizations and all babies they deliver to the hospital for a BCG injection. A special "cord-cut unit" is located in the hospital complex where babies are brought with the placentas still attached for umbilical cord-cutting or for recutting if the cord has been improperly cut.

Midwives receive sterile supplies and special boxes in which to carry them from the hospital. The supplies are replenished at monthly meetings that serve as forums for discussion and continuing education.

Lessons Learned/Innovations Used: In addition to offering hospital-based services to mothers, including pre- and postnatal care, this project has made an effort to provide outreach services to the community and to train local people to extend hospital services into local communities. Rather than encouraging hospital deliveries, this project supports the use of TBAs for all deliveries other than high-risk or emergency ones.

INDIA/Comprehensive Health and Development Project, Pachod Hospital, Pachod 431 121, District Aurangabad, Maharashtra, India

General Project Description: In operation since 1977 in a rural area of approximately 75,000, this project aims to integrate maternal and child health services with functional literacy and development services for women. Employing the training of traditional birth attendants (*dais*) to conduct safe deliveries, and the provision of health services by community health workers (CHWs) and multipurpose workers (MPWs) as entry points into the community, the project seeks to utilize these change agents as catalysts to stimulate the poor, frequently landless women of the community in a continuing process of learning and socioeconomic advancement. As of 1979, the project had trained three levels of grassroots workers: 30 dais, 14 CHWs, and 10 MPWs. The project also holds fortnightly village clinics conducted by highly trained medical personnel to handle difficult cases, and provides an ambulance service to the project's base site for emergencies. The easy access to multiple tiers of trained health workers has led to a preference for this service structure in the community.

Maternal Health Problems and Interventions: The program has emphasized the importance of training existing village dais from its inception. In 1978 a baseline survey showed that only 8 percent of deliveries were being performed by trained medical personnel and only 8 percent of pregnant women received antenatal care. The remaining 92 percent of deliveries were conducted at home by relatives (86 percent) or by untrained dais (6 percent). By 1980, after the project's intervention, 8 percent were still performed by medical personnel, but 56 percent were performed by trained dais and only 36 percent by relatives. Antenatal coverage had also jumped to 88 percent in covered areas. The dais were given one week of initial training supplemented by fortnightly inservice training that emphasized cleanliness and aseptic techniques during delivery and antenatal care for prevention. Before training, 80 percent of the dais had such dangerous practices as cord cutting with sickles, broken pieces of glass, or stones. The program provided them with safe delivery kits complete with sterilized blades and cord ties for each delivery.

Child health services provided by the CHWs and MPWs have focused on reducing neonatal and infant mortality, malnutrition, and xerophthalmia through such actions as immunization and health education. Growth charts for all under-fives in each village have been prepared and over a period of three years, the number of under-fives with third degree malnutrition has dropped from 19.1 percent to 5.1 percent. The main factor leading to neonatal mortality in Pachod has been determined to be low birth weight and prematurity. The project now emphasizes the nutrition of the mother during the antenatal and postnatal period, as well as neonatal care. Immunizations are provided by teams working simultaneously on registration of nutritional status by weight and examination, and follow-up including health education. At the time of the baseline survey, 8 percent of children had received three doses of DPT. In 1980 this had increased to over 80 percent in the two sub-centre blocks where coverage had been completed. Vitamin supplements are provided for children screened

and found to be suffering from xerophthalmia, and prevention has been emphasized in health education.

Lessons Learned/Innovations Used: The majority of illiterate dais trained in this program are poor and low caste. Their status is improved after training, and the program's subsequent emphasis on nonformal education, functional literacy, and training and bank loans for setting up dairy cooperatives and other cottage industries, has provided the poorest women in the community with the opportunity to change permanently their socioeconomic condition. It is felt that the effect on other women in the community is also substantial. For example, after the dais were trained in aseptic and safe delivery procedures, the 36 percent of cases where relatives still delivered were improved because the relatives changed their practices through the awareness created by the dais. The project now proposes to provide training in dairy farming to all its dais plus 50 women villagers (10 each from five different villages) currently enrolled in the project's adult literacy program. This program stresses the relevance of literacy to socioeconomic change and consequently to improving health and living conditions.

INDIA/Jamkhed Comprehensive Rural Health Project, Jamkhed, Ahmednagar District, Maharashtra, India

General Project Description: Begun in 1971, this project is directed by the original founders, Drs. Raj and Mabelle Arole. This highly participatory, community-based project covers 70 villages with over 100,000 people. As of 1981, 150 village health workers (VHWs)—usually illiterate and sometimes even low caste village women—had been trained to provide basic health services, including maternal care. These health workers receive ongoing training at the health center in Jamkhed two days each week and are visited one day each week by a mobile training team that includes a nurse and paramedical worker. The health center has facilities for emergency care and acts as a referral center for problems that cannot be handled within the community. It is estimated that at least 80 percent of all health problems can be taken care of by the village health workers and the mobile health team.

In addition to health services, the project encourages the integration of other development activities, including improved agricultural techniques, the building of roads to connect villages, improved water and sanitation, and income-generating activities for women.

Maternal Health Problems and Interventions: VHWs provide both pre- and postnatal services to mothers. They give out iron and vitamin pills and arrange for immunizations against tetanus during the mobile team visits. Pregnant women are seen at least every two weeks, and any danger signs are reported to the mobile health team or to the main health center. Relatives of the mother still conduct most of the deliveries, but the VHWs give them instructions in simple principles of hygiene and preventive measures and also attends some births. The health worker keeps razor blades and sterile thread and bandages for care of the umbilical cord. Each pregnant woman is examined at least three times during pregnancy by the nurse of the mobile team. She advises the VHW as to whether the woman should deliver at home or in the hospital. The health center has basic diagnostic and curative capabilities and can handle obstetrical emergencies.

Lessons Learned/Innovations Used: In 1971, a survey showed that less than 0.5 percent of expectant mothers in India sought prenatal care. In villages with health workers, the number of women receiving regular prenatal care has risen to approximately 80 percent. Over 40 percent of deliveries are conducted by VHWs. Along with improved health status for mothers and their children, there have been noticeable improvements in women's status and the breaking down of caste barriers. VHWs act not only as providers of health care, but also as social change agents and development workers.

INDIA/Voluntary Health Services, Adaym, Madras 600 113, India

General Project Description: Voluntary Health Services is a non-profit society that works in health improvement, education, and research in poor areas of southern Madras City and nearby rural areas. Soon after founding a medical center in 1963, the project began establishing "mini health centres" (MHCs) and health posts to extend the reach of services.

Each MHC is responsible for the health needs of 1,000 families or 5,000 people in a rural area or urban slum. Working in five districts of Tamil Nadu and Karnataka states, the project strives to provide comprehensive, continuous, cooperative community care.

The health program is organized similarly to a health maintenance organization (HMO) in the United States. Families join as members and pay a fixed monthly fee. Defaulters and nonmembers must pay for their services. Services emphasize prevention. Each family member receives physical examinations, nutritional assessments, laboratory examinations, and treatment and follow-up as required. Eighty to eighty-five percent of clinic visits are by mothers and children. An "at-risk register" is kept of persons requiring special attention.

The Tamil Nadu government provides financial assistance for the over 245 MHCs operated by voluntary agencies throughout the state. Wherever MHCs are started, established government health personnel (auxiliary nurse midwives and other paramedicals) are withdrawn to avoid duplication of work and conflicts.

Maternal Health Problems and Interventions: Special efforts are made to have maternal health services available and accessible. Female multipurpose workers and public health nurses/lady health visitors provide antenatal, delivery, and postnatal services along with family planning advice to eligible couples. Folic acid and iron tablets are distributed to women from the fifth month of pregnancy until six months after they give birth. Tetanus toxoid immunizations are given. Each mother is visited once a month during pregnancy and lactation for identifying problems, giving educational advice, and taking other preventive actions. Special effort is made to detect anemia, toxemia, and other conditions as early as possible.

The project trains *dais* (traditional birth attendants) in safe delivery methods. The 60 to 70 percent of women who use *dais* for delivery assistance receive pre- and postnatal care from the MHC staff.

To extend the reach of services, in the early 1970s the project began establishing health posts and training lay first aiders (LFAs) to attend 500 to 1,000 persons in areas distant from MHCs. LFAs are women who are permanent residents of their villages, have some basic education, and are motivated to do community service. They attend four weeks of training, four hours a day, and then receive continuous inservice training and supervision. Besides their first-aid duties, LFAs inform the health team of village happenings and round up children for immunizations, pregnant women for antenatal care, eligible couples for family planning, and other persons at risk.

Lessons Learned/Innovations Used: This project's maternal health services are noteworthy for their emphasis on prevention and universal access (through MHCs, LFAs, home visiting, and use of female staff). The family memberships and extensive community involvement should also be noted.

NICARAGUA/Traditional Birth Attendant Training, Ministerio de Salud, Managua, Nicaragua

General Project Description: Between 1976 and 1979, the Ministry of Health of Nicaragua trained 768 traditional birth attendants (TBAs) to provide a limited range of health services in largely rural communities. The program was designed to establish low-cost rural health coverage in a relatively short period of time. At the beginning of the program, a team of four nurses was assigned to develop and teach the training courses. The training team conducted 47 training courses before the program was disrupted by political unrest.

Maternal Health Problems and Interventions: Prior to the training program, utilization of existing health clinics and health posts was

relatively low; few outreach activities extended service coverage. The proportion of women who had utilized any health services related to the last pregnancy ranged from 10 percent for postpartum care to 16 percent for prenatal services. To address the health needs of the dispersed and underserved population, the Ministry of Health decided to undertake a program based on community volunteers. Because of widespread interest in improving obstetrical practices in rural areas, the Ministry decided to focus exclusively on training TBAs, who attended approximately 80 percent of all deliveries.

Certain interventions were chosen for emphasis in TBA training based on low cost and effectiveness. These were simple enough so that TBAs (over two-thirds of whom were illiterate) could carry them out with minimal training. Interventions included oral rehydration therapy, family planning, treatment of parasites, vitamin/folate/iron tablet distribution, nutrition education, provision of aspirin, and referral for obstetrical complications and other maternal health services.

Lessons Learned/Innovations Used: The performance of a TBA in providing these services was closely related to her reported level of activity as a birth attendant before training. TBAs who had attended more than five births in the previous year, for example, distributed nearly four times as many oral contraceptives as their less active counterparts. Age and literacy did not appear to correlate with performance, except that elderly TBAs who appeared to have physical limitations such as impaired hearing and difficulty carrying the health kit did perform poorly, both in the training course and in their communities.

Supervision, to have been provided by the Ministry of Health clinic staff, does not appear to have been carried out successfully, and the training team could supervise only a small number of trained TBAs. Periodic meetings of TBAs at local Ministry facilities for retraining and resupply also had limited effectiveness since, on the average, less than half the TBAs trained were in attendance. Despite improvements in the TBA training course over time, the TBAs' impact was limited by lack of support for them afterwards.

PHILIPPINES/The Bohol Province Maternal and Child Health-Based Family Planning Project, Tagbilaran City, Bohol, Philippines

General Project Description: The Bohol Project is one of four projects designed by the Population Council in the 1970s and funded by the United Nations Fund for Population Activities to demonstrate and evaluate the integrated maternal and child health/family planning approach in rural areas of developing countries. Similar projects were initiated in Indonesia, Turkey, and Nigeria. The Bohol Project operates within the Philippine Ministry of Health. The project initially recruited and trained 44 high school graduates for two years to become midwives. Others were added later. By 1979, 100 small primary health care centers, each staffed by a midwife, had been established in the project area. Barangay health workers were also trained for several months in first aid, nutrition education, family planning, making referrals, and environmental sanitation. Some are practicing traditional birth attendants (*hilots*) while others are under-employed residents with a high school or college education.

There are more than 600 hilots practicing in the project area. They attend the majority of deliveries and provide a number of prenatal and postpartum services. Hilots receive about a month's training at the project's central office or in the Rural Health Units (RHUs) and later get refresher training from the RHUs or midwives.

Maternal Health Problems and Interventions: Most births take place in the woman's home or the home of a relative or friend. Two-thirds of all deliveries are attended by hilots. Hilots attend most normal pregnancies, but in cases of pregnancy problems, women usually attend RHUs. Among the prenatal services provided by hilots are massage to determine the age and position of the fetus, application of a belt made of herbs and leaves, and advice on foods and activities to avoid while pregnant. Hilots often refer patients to RHUs for prenatal checkups. They rarely give advice on family planning because

such services are generally given by RIU personnel. Hilots also provide postpartum care including dressing of the baby's cord, cleaning up the mother, massaging the uterus to return it to its normal position and size and to remove clotted blood, and preparing herbal extracts for the new mother to drink.

Midwives are responsible for supervising the work of the trained hilots, who are to report monthly on their activities. The midwives provide services from Primary Health Care Units, including prenatal care, delivery, and postpartum care, and conduct mothers' classes in the *barrios*. They refer cases beyond their capacity to the RIU, which can refer them, if necessary, to the nearest hospital or clinic facility.

Lessons Learned/Innovations Used: Several anthropological studies were carried out before implementing the project. These provided insights into the beliefs and practices relating to conception and pregnancy, childbirth, and child care, and helped in the design of training courses and selection of appropriate health personnel. Hilot training concentrated on replacing harmful practices and beliefs and on encouraging or extending the effective ones.

SIERRA LEONE/Southern Province Primary Health Care Project, Serabu Hospital, Serabu, Sierra Leone

General Project Description: This project developed out of a rural missionary hospital which was upgraded from a dispensary and school. In the late 1960s the hospital began running mobile clinics in towns in three chiefdoms. Since the mobile clinics were too expensive to run and were not having the impact intended, they were converted into training programs for village health committees. The program seeks to establish primary health care in small villages and hamlets by utilizing traditional social structures.

Traditional birth attendants (TBAs) are all officials in the Sande, a women's secret society organized in every village in Sierra Leone. The Sande is traditionally responsible for maternal and child health, nutrition, domestic hygiene, and some aspects of herbal medicine. TBAs are politically powerful and have tremendous influence over the health behavior not only of other women, but also of villagers in general. Most TBAs are illiterate and therefore require on-the-job training in a village clinic setting. Those trained in this project become part of the village health team. They receive inservice visits by hospital staff over a period of years.

Maternal Health Problems and Interventions: Training is given to all the village midwives, who are trained as a team, often at the Sande women's house. If only one midwife were given training, it would disrupt the solidarity of the group. Midwives are supplied with chloroquine for malaria, iron for anemia, antipar for intestinal parasites, and aspirin. They are trained to organize and conduct antenatal clinics in consultation with community nurses.

Lessons Learned/Innovations Used: A number of constructive innovations have resulted from working closely within village social and cultural structures. For example, neonatal tetanus was shown to account for about 24 percent of newborn deaths in both national and local surveys. However, since the time that traditional midwives incorporated tetanus vaccinations into the ritual process of puberty rites, neonatal tetanus has virtually disappeared from program villages.

SUDAN/Village Midwife Training Program, Ministry of Health, Khartoum, Sudan

General Project Description: Training for illiterate Sudanese traditional birth attendants (TBAs) began in 1921 at the Omdurman Midwifery School. Today, village midwives, who are mostly inexperienced young women, are selected by the community to undergo nine months of training in one of the 17 midwifery schools in the country. The training is very practical and focuses on prenatal care, attendance of normal deliveries in the home, and postnatal care and education of mothers about nutrition, infant feeding, and personal hygiene. Although the proportion of trainees who are literate has increased in recent years, the vast majority of midwives practicing

in Sudan cannot read. This program is widely recognized as one of the finest in Africa and has become well accepted throughout Sudan.

Maternal Health Problems and Interventions: Maternal mortality and morbidity is high in Sudan, even in the African context. Causes include anemia, malnutrition, closely-spaced pregnancies, and complications of labor and delivery. Postpartum infection, pregnancy wastage, and sterility due to sexually transmitted diseases add to the health problems, as does the widespread practice of Pharaonic (major) circumcision.

Trained village midwives have replaced many of the traditional birth attendants in urban areas of Sudan; however, it is estimated that in rural areas 75 to 90 percent of all deliveries are attended by TBAs. Traditionally, untrained TBAs not only deliver babies, but act as consultants on diseases of women and perform (and later try to repair the damages of) Pharaonic circumcision, assist women in abortion, and provide advice on traditional methods of contraception or methods of increasing fertility.

Untrained TBAs are forbidden by law to practice, so they do so mostly in secrecy. It was largely the unhygienic methods of the untrained TBAs that led to the initial attempts to train them at the Omdurman School, and that caused practice by untrained TBAs to be declared illegal. While the intent of the national program is to replace untrained TBAs with village midwives, this certainly has not occurred in rural areas. It has been proposed that TBAs be given short courses in hygienic techniques and be taught about the dangers of Pharaonic circumcision, but no such programs are currently under way.

Lessons Learned/Innovations Used: During the nine-month training course for village midwives, they learn how to perform episiotomies, which are generally necessary in deliveries due to the effects of circumcision. Techniques for assisting labor in vertex and breech presentations and how to deliver twins are also given. Each trainee is required to deliver successful cases using models and to assist in a minimum of 25 deliveries in the community under supervision. Medicines and drugs used are distinguished by relying on color, taste, touch, and smell. Midwives are taught to refer abnormal pregnancies and how to seek assistance in emergency situations during labor and delivery. They are trained in the use of simple drugs such as ergometrine, ferrous sulfate, vitamins, and chloroquine tablets. The administration of intravenous ergometrine and local anaesthesia were recently incorporated in the course.



Midwife training in Omdurman, Sudan. ICEF 3377, P. Almusy

VENEZUELA/Simplified Medicine Program, (Programa de Medicina Simplificada), Ministerio de Salud Publica, Qta. Piritá, la Avenida El Casquillo Ur. Avila, La Florida, Caracas, Venezuela

General Project Description: This project, which began in 1962, aims to extend the existing national health system of Venezuela by training health auxiliaries to work in isolated rural health posts. Maternal and child care is a principal activity of the auxiliaries. Over 2,000 salaried health auxiliaries staff rural dispensaries in communities of under 2,000 residents. Three to five dispensaries are overseen by a subcenter, which is staffed by a full-time general practitioner and a few auxiliaries. The Simplified Medicine Program was initiated by Venezuela's professional medical community.

The program is financed mainly from the normal budget of the regional health service. Local communities help meet some of the expenses—maintenance and minor repairs of buildings—but services, including medications, are provided free of charge to individuals.

Maternal Health Problems and Interventions: Health auxiliaries attempt to give periodic examinations to all pregnant women in their areas, to immunize them against tetanus, and to schedule each one for at least two appointments with a physician. Auxiliaries encourage mothers to go to a health subcenter for delivery, especially if they are giving birth for the first time. If the distance is too great, the mother is encouraged to use a traditional birth attendant (TBA) who has been trained by nurses at the subcenter. With periodic assistance from their nurse supervisors, auxiliaries register and supervise TBAs and provide them with birth kits. Pregnant women receive supplementary foods as well as iron tablets.

Auxiliaries do sputum smears and treat tuberculosis, parasitic disorders, anemia, malnutrition, malaria, and venereal diseases. A manual, to which they are to adhere absolutely, describes their curative functions and specific drugs that they are allowed to use. Auxiliaries offer no direct family planning services, but motivate interested community members to seek assistance from the Ministry of Health's family planning program. They make frequent home visits, give nutrition education, and encourage family vegetable gardens and animal-raising. Forty registered nurses supervise, observe, and instruct auxiliaries in the field.

Lessons Learned/Innovations Used: So far no vehicles have been assigned to the dispensaries, so home visits are carried out using whatever means are at the auxiliaries' disposal (walking, bicycles, mules). All district health centers and most subcenters have ambulances that the auxiliary can request for the transportation of patients, using any means available in the village—such as telephone or messenger—to make the request to the center. Some use is made of radio communication.

While the auxiliaries do receive training in deliveries, they are not to interfere with or replace the TBAs in their role except if midwife practices pose a threat to mother or child. The job of the auxiliary is to be present at most deliveries and to secure sanitary conditions for the delivery and to provide pre- and postnatal care. The 200-page manual which the auxiliary receives during training outlines pre- and postnatal care, how to deliver a baby, a guide to adequate nutrition and reminders of what to discuss in their monthly meetings with local midwives.

Most of the dispensary aides who staffed the dispensaries before the start of the Simplified Medicine Program were women. Some did little more than assist the physicians when they came for periodic visits, but others attempted to provide services such as dispensing drugs or delivering babies. These aides were given preference for training as health auxiliaries. Many communities have had difficulty accepting the limitations placed on the services which the health auxiliaries can provide in areas where aides were more active. The supervisory physician or nurse meets with the auxiliary and the community in these cases and attempts to resolve this difficulty.

Early in the program, women were given preference when health auxiliaries were selected. Men are being more widely used now and are actually given preference for the more isolated, less-developed areas as well as for supervisory positions. It is not clear how this affects the delivery of maternal health services.

YEMEN ARAB REPUBLIC/Raymah Health Project, P.O. Box 1287, Sanaa, Yemen Arab Republic

General Project Description: Operating in the mountainous regions of the Yemen Arab Republic since 1976, this project aims to enable local people to improve their own health through training local health workers and educating the population to modify their lifestyle to promote their own health. Twelve men have been trained as Primary Health Care Workers (PHCWs). The project has also trained ten traditional birth attendants (TBAs) and was training another five in the summer of 1983. TBAs are taught to give prenatal, delivery, and postnatal care. They learn how to manage problems occurring in the third stage of labor, such as bleeding and retained placenta, as well as to use ergometrine tablets and other drugs.

Maternal Health Problems and Interventions: In the project area, most women are chronically ill. Common causes of maternal illness and death are anemia and infectious diseases such as urinary tract infections, tuberculosis, schistosomiasis, and malaria. Postpartum hemorrhage and retained placenta have been eliminated as major causes of maternal death by actions of project-trained TBAs. Anemia, where TBAs are active, has also been notably reduced.

Women must always be escorted by a male relative when they travel to a health facility. Many women request birth assistance only if there is a problem; otherwise, the woman's mother attends the delivery. Few women consent to be examined by a male health worker, so PHCWs are limited in what they can do for maternal health (they cannot perform gynecological examinations, for example). A minority of women also refuse to be attended by TBAs, because they are considered lower class.

Major project activities to improve maternal health include training TBAs and PHCWs; giving health education (one-on-one by TBAs in women's homes and also in clinics by PHCWs and assistant midwives); TBAs visiting pregnant women monthly for education, examination, distributing vitamins and iron, and referral; attending births (TBAs and assistant midwives); and making home visits to mothers and newborns to handle or refer problems. TBAs have been effective health educators in the home, particularly regarding breastfeeding, weaning, the treatment of childhood illnesses, and the importance of immunizations. Informal parties with talks and slides on nutrition have also been used for health education. PHCWs and assistant midwives give standard maternal care at clinics, including giving iron and vitamins to all pregnant women and malaria prophylaxis to those in high-risk areas.

Lessons Learned/Innovations Used: A statement by a project representative well summarizes some of the project's strengths: "We have tried to always use women as the prime givers of care and advice to women. We have used already recognized traditional healing women to encourage other women to accept modern health care. We have based maternal health care in the home not a clinic."

The project teaches TBAs to complete antenatal cards on all pregnant women. It was hoped that the Ministry of Health would adopt the card, but this has not occurred. At first, the TBAs understood how to use the card quite well, but they needed much supervision to remember to fill it all in. However, in some cases, it seemed that they were more concerned with filling in the card than in talking with and advising the mother. One of the purposes of the card was to accompany the woman if she were referred, but it was not certain that medical personnel would pay any attention to the completed cards.

The project is experimenting with an innovation to improve maternal health where there are PHCWs but no TBAs. The PHCW will identify in each village a man and wife to receive basic instruction in MCH. The woman will give iron to pregnant women and report any woman who is sick to the PHCW when he is there on his regular visits. The PHCW will then visit the woman.

Project staff feel that they gave too many medications and too complicated information to the first group of ten TBAs. After three years, medicines have been reduced to iron, vitamins, paracetamol, ergometrine tablets, and possibly antacids. Any problem they cannot deal with using these or traditional herbal remedies can be referred to an assistant midwife.

Appendix D

RECOMMENDED READINGS AND REFERENCES

Part 1. Selected annotated bibliography

- 001 ACC/SCN Consultative Group on Maternal and Young Child Nutrition. "Maternal Malnutrition." *Food and Nutrition Bulletin* 4 (July 1982): 45-51.

This article summarizes the conclusions of a meeting of experts held in Geneva in August 1981. After noting some of the basic maternal nutrition problems, the article describes long-term interventions (taking legislative actions, promoting education, increasing food availability, encouraging appropriate technology to reduce maternal work, and providing health services) as well as short-term interventions (measures to increase food available to mothers, treating and preventing anemia, preventing and treating vitamin deficiencies, preventing iodine deficiency, and giving food supplements where no other short-term action is feasible). Finally, the article lists gaps in our knowledge concerning maternal nutrition. These include the ability to assess: maternal nutritional status and nutritional requirements for pregnancy; the effects of dietary supplementation on pregnant women; the feasibility of improving maternal diet without improving the total family diet; the efficiency of maternal dietary supplementation at different levels of intake; the timing of supplementary feeding; the role of the placenta in nutrient utilization; the effects of dietary supplementation on the fetus; the insufficient milk syndrome; the effects of long-term lactation, of lactation during pregnancy and menstruation, of hormonal contraceptives, of suckling behavior, and of toxic substances; the cumulative effect of childbearing in adverse circumstances; and the utilization of risk factors.

- 002 Blair, P. W., ed. *Health Needs of the World's Poor Women*. Washington, D.C.: Equity Policy Center, 1981. 205 pp. Available from the Equity Policy Center, 1302 18th Street, N.W., Suite 502, Washington, D.C. 20036, USA. Cost: US \$17.50 per copy plus postage with quantity discounts available.

This volume is based on the proceedings of the Equity Policy Center's International Symposium on Women and Their Health held in June 1980. Conference papers are organized into the following sections: the health needs of Third World women; nutrition; access to services; water and sanitation; women as health care providers; experiments in primary health care; and national and international strategies. These papers form the bulk of the document and provide insights into many generally neglected aspects of women's health such as female circumcision, abortion, sexually transmitted diseases, and the consequences of domestic violence. Other papers discuss malnutrition, fatigue, barriers to receiving services, and the training of traditional practitioners. A number of papers highlight the need for women-to-women health delivery systems and the critical importance of programs that will give women the confidence, as well as the cash, to seek health care for themselves and their families. Summaries of the findings and recommendations of each of the conference's working groups are included in an appendix.

There was general agreement among the participants that any attempt to improve the health status of mothers must first address the general conditions under which most women live. It is impossible to isolate women's motherhood role from their

roles as workers and community providers. While specific changes are advocated to improve the health status of mothers, it is recognized that unless there are major changes in society leading to more equitable distribution of resources and power, the health problems of mothers in developing countries will not be substantially reduced.

Despite the fact that many of the papers are brief, the collection as a whole offers an excellent survey of women's health. The papers and working-group recommendations provide a wealth of constructive ideas and useful suggestions for national and international policymakers, health planners, and concerned individuals who work in the health field.

- 003 Boston Women's Health Book Collective and Women's International Information and Communication Service (ISIS). *International Women and Health Resource Guide*. Boston, July 1980. 177 pp. Available from Boston Women's Health Book Collective, Box 192, West Somerville, MA 02114, USA, or ISIS, Case Postale 301, 1227 Carouge, Switzerland. Cost: US \$5.00 surface mail or US \$8.00 air mail.

This guide, a joint project of the Boston Women's Health Book Collective (authors of *Our Bodies, Ourselves*) and the Women's International Information and Communication Service (ISIS), reflects a wide range of women's concerns in many countries. The guide repeatedly emphasizes the need for women's viewpoints, analyses, and proposed solutions to be acknowledged and respected. The major purpose of the guide is to present the work being done in health by lay-women, rather than professionals, and to assist women's initiatives worldwide that are attempting to change policies and practices that are detrimental to the health of women and communities.

Resource organizations, books, journals, articles, and overview sections are organized according to major themes: women's role in health (as consumers and providers); reproductive issues; drugs and drug companies; food and nutrition; childbirth and breastfeeding; menopause and aging; occupational and environmental health; and self-help. A country/region index is included, and extensive cross-referencing is used. Annotations and entries appear in the original languages (English, Spanish, French, Italian, and German) and English translations are given where necessary.

- 004 Cole-King, S. *Approaches to the Evaluation of Maternal and Child Health in the Context of Primary Health Care*. (MSM/79.2). Geneva: World Health Organization, 1979. 84 pp. Available from the Division of Family Health, WHO, 1211 Geneva 27, Switzerland.

This work argues that because primary health care (PHC) challenges many traditional planning/management concepts and the existing organization of services in many places, PHC evaluation likewise requires new approaches. After discussing many types of evaluation that have been used, the author proceeds to outline a reasonable approach. The need to demystify evaluation and make it a relevant management tool is emphasized. The approach also assumes that, since PHC is defined as a process, the evaluation approach should emphasize steps in the process rather than specific results.

Although much of the discussion concerns PHC in general rather than MCH specifically, MCH examples are given frequently and many of the useful appendices concern MCH evaluation: e.g., "Priority Health Problems in MCH in Ghana, Related to Functions and Tasks of Health System" and "List of Indicators of MCH Care Effects." Although written on a fairly technical level, the paper is well-organized and provides a good summary of much of the thinking and experience on PHC/MCH evaluation, along with new ideas on it.

- 005 Cosminsky, S. "Traditional Midwifery and Contraception." In *Traditional Medicine and Health Care Coverage*. Geneva: World Health Organization, 1983. Available from the WHO booksellers. Cost: Sw. fr. 35.

This chapter provides a fine summary of the role of traditional birth attendants (TBAs) in maternal and child health. Areas covered include traditional concepts of illness and health, characteristics of the traditional midwife, traditional recruitment and training, prenatal care, delivery, the placenta and umbilical cord, treatment of the newborn, postpartum treatment of the mother, contraception, and coordination of TBAs with the modern health care system. The author is sympathetic to TBAs, feeling that they constitute a valuable health resource. She argues that any nontraditional training of TBAs should strive to build on traditional practices, not teach TBAs a foreign system of Western obstetrics.

- 006 Edstrom, K. G. "Reproductive Health in Adolescence: An Overview." In *Advances in International Maternal and Child Health*, Vol. 1, edited by D. B. and E. F. P. Jelliffe, 24-42. Oxford, New York, and Toronto: Oxford University Press: 1981.

This chapter provides an excellent overview of the global trends in reproductive health and behavior during adolescence. The development of sexual maturation and the initiation of sexual activity are discussed in relation to the western world and changing patterns in the developing world. Early (10 to 14 years) and late (15 to 19 years) phases of adolescence should be distinguished, as significant differences surface between the two groups. Intramarital and premarital sexual activity during adolescence is examined along with consequences such as sexually transmitted disease, pregnancy, induced abortion, and demand for contraceptive services. The increased risks associated with pregnancy in the early teens and the adverse health effects visited on children as well as mothers are underscored. Data concerned with maternal, perinatal, and infant mortality and morbidity is presented; and the issue of the effects of induced abortion vis-a-vis immediate complications and future fertility is raised. Finally, the social implications of teenage pregnancy for men as well as women and the use of contraceptives (including a discussion of the health effects of various contraceptives on young populations) is reviewed. The author concludes, among other points, that sexually active adolescents both in intramarital and premarital unions exist in all societies and that there are strong health reasons for helping teenagers to postpone pregnancy.

- 007 Hamilton, S., B. M. Popkin, and D. Spicer. *Nutrition of Women of Childbearing Age in Low-Income Countries: Significance, Patterns, and Determinants*. Chapel Hill, NC: Carolina Population Center, the University of North Carolina, 1981. 212 pp.

This book, prepared by a multidisciplinary research group at the Carolina Population Center (U.S.A.), summarizes studies on all major aspects of women's nutrition in developing countries. The authors find that women are not only at the center of most household decisions affecting infants but that they also face tremendous economic, time, and sociocultural

constraints in meeting their own and their family's nutritional needs. It was also found that while the relation of women's nutrition to pregnancy outcome, lactation, and infant growth and development has been extensively researched, little attention has been paid to the nutrition of women beyond their childbearing roles. Studies on dietary supplementation of pregnant and lactating women and on the effects of their diet on pregnancy outcome and prepregnancy nutritional status abound, but little is known about women's lifelong diet, its effects on their short and long-term health and well-being, the factors affecting this diet, and the ways policies can be developed to improve women's diet and nutritional status.

- 008 International Planned Parenthood Federation. *Programme Development. Planned Parenthood and Women's Development. Lessons from the Field*. London, 1982. Available in French and soon to be available in Spanish and Arabic. Cost: US \$13.50.

This publication presents nine case studies of the "planned parenthood and women's development" approach of the International Planned Parenthood Federation. Case studies describe projects in Bangladesh, Costa Rica, Egypt, Indonesia, Jamaica, Kenya, Lesotho, Sri Lanka, and Tunisia. A summary of lessons from the field includes reports on the environment, needs identification strategies, participant partners, family planning costs and funding mechanisms, problems and constraints, assessment and monitoring, and likely future directions of the program. While the case studies do not go into great depth, their uniform organization makes for easy comparison and drawing of tentative conclusions.

- 009 Lovel, H. *Bibliography on Teacher Training Material for Maternal and Child Health Workers*. Geneva: World Health Organization, in preparation.

This book, currently in preparation, will be available at no cost to MCH programs in developing countries. It brings together existing material in specific areas of mother and child health so that "people will not have to reinvent the wheel" in designing their training courses. The illustrated, annotated bibliography is in 11 color-coded parts, each subdivided so that it can be used as a set of teaching modules in itself. These parts are as follows:

1. Care of mothers in pregnancy and childbirth
2. Child nutrition and promotion of food supply
3. Promotion of normal growth and development of children and young people
4. Promotion of mother and child health through birth spacing/family planning services
5. Prevention of infectious disease by immunization
6. Prevention of MCH disease through promotion of environmental sanitation and hygiene
7. Care of the sick child
8. Care of the injured child
9. Help for the mother or child with a handicap or disability
10. Planning, organization and evaluation of MCH care
11. Learning how to teach others to provide better MCH care

The hope is that a person reading a specific section will see the priority areas that need discussion and will also see what materials are available, with examples of good illustrations where they are available.

- 010 Maine, D. *Family Planning: Its Impact on the Health of Women and Children*. New York: Columbia University, 1981. 56 pp. Available in English, French, or Spanish from the Center for Population and Family Health, College of Physicians and Surgeons, Columbia University, 60 Haven Avenue B-3, New York, NY 10032, USA.

This book provides an excellent, clearly written, and well-illustrated summary of evidence on the benefits of family planning for the health of women and children. The first chapter explains how a child's chances of being born healthy, of surviving the first years of life, and of growing well are reduced if there is a short birth interval between children, if there are already three or more children in the family, or if the mother is under 20 or over 35 years old. Family planning improves children's health by helping women space births, have smaller families, and avoid pregnancies at unfavorable ages. In countries where large portions of women have already adopted family planning, the resulting changes in childbearing patterns have contributed substantially to reduced infant mortality.

The second chapter explains how family planning can help high-risk women avoid the complications of pregnancy and childbirth that threaten their lives. In addition, it points out that when women have access to effective contraception, they are less likely to resort to dangerous illegal abortions in order to control their fertility.

The third chapter reviews the state of family planning and birth spacing around the world. It also discusses side effects of contraceptive methods, but points out that in most countries the risks for women of family planning are much less than the risks of pregnancy and childbirth.

- 011 Mangay-Maglacas, A. and H. Pizurki, eds. *The Traditional Birth Attendant in Seven Countries: Case Studies in Utilization and Training*. World Health Organization Public Health Paper No. 75. Geneva, 1981. 211 pp. Available in English, French, and Spanish from the WHO booksellers. Cost: Sw. fr. 15.

This publication describes efforts that have been made by six countries to establish traditional birth attendant (TBA) training programs and the reasons why a TBA program is being considered by a seventh country. Each of the studies first provides a general picture of the training and use of TBAs and then elaborates upon a special feature of the program. The Philippines, for example, was the first country to have carried out a nationwide survey of TBAs. The methodology and findings of the survey are given in detail. In the Thailand report, special attention is given to the training, use, and impact of TBAs in the national family planning program. In addition to the Philippines and Thailand, case studies are included from Ecuador, Honduras, Sierra Leone, Sri Lanka, and Sudan. A concluding chapter includes questions that should be asked by decision makers and those designing TBA training programs and discusses numerous problems that underlie the development of training programs in developing countries.

- 012 Philpott, R. H., ed. *Maternity Services in the Developing World—What the Community Needs. Proceedings of the Seventh Study Group of the Royal College of Obstetricians and Gynaecologists September 1979*. London: Royal College of Obstetricians and Gynaecologists, 1979. 394 pp.

This extremely valuable book reports the papers and discussions that took place at the Seventh Study Group meeting of the Royal College of Obstetricians and Gynaecologists in England in September 1979. The meeting brought together many of the foremost experts on maternal health in developing countries. The information in this book is comprehensive, full of insights and interesting experiences. Numerous program case studies are sandwiched between presentations and discussions. Major topics covered include maternal and perinatal epidemiology, reducing maternal and perinatal mortality, provision of maternity services, the newborn, family planning, midwifery care, and national policies. This book contains a wealth of information for anyone interested in improving maternal health in developing countries.

- 013 Population Information Program. *Population Reports*. Available from Population Information Program, The Johns Hopkins University, Hampton House, 624 North Broadway, Baltimore, MD 21205, USA. Issues may be available in Arabic, French, Portuguese, and Spanish as well as English. Copies are free of charge for family planning and health personnel in developing countries. In developed countries, multiple copies are US/\$.50 each unless they are used to benefit developing countries.

Population Reports is a concise and descriptive bimonthly journal which informs readers of new developments in fertility management, family planning programs, demographic change, law and social policy, and other areas of international population concerns. Emphasis is given to the experience of developing countries and the focus is on practical problems and how they are being resolved. The reports, which are generally 20–60 pages each, include a one or two-page summary of findings, illustrative graphs, charts, and a comprehensive bibliography on the topic addressed. The issues listed below are especially relevant to the topic of maternal health.

"Adolescent Fertility—Risks and Consequences." J-10, July 1976 (English, Spanish)

"Community-Based Health and Family Planning." L-3, November/December 1982 (English)

"Complications of Abortion in Developing Countries." F-7, July 1980 (English, French, Spanish, Portuguese)

"Family Planning: Primary Health Care Service for Better Maternal and Child Health." J-27 (in preparation).

"Health: The Family Planning Factor." J-14, March 1977 (English, Arabic, Spanish)

"Infertility and Sexually Transmitted Disease: A Public Health Challenge." L-4, July 1983 (English)

"Traditional Midwives and Family Planning." J-22, May 1980 (English, French, Spanish, Portuguese)

- 014 Program for Appropriate Technology in Health (PATII). "Technologies for Pregnancy Care." *Health Technology Directions* 4-1 (First Quarter 1984): entire issue.

This issue provides an excellent summary of technologies used worldwide in pregnancy care. Although some of the discussion is medically oriented, the generalist reader can understand most of the document easily. Specific topics covered include risk assessment, treating specific problems during pregnancy, and program management.

- 015 Reid, S.E. and D.G. Johnson. *Obstetrics for Health Extension Officers*. Port Moresby, Papua New Guinea, 1972. 157 pp.

This manual, while designed for physicians working in rural areas of Papua New Guinea, provides excellent information on prenatal and postnatal care as well as the complications of childbirth. It is written clearly and simply and could be used as a reference source for mid-level health workers and in training courses for health workers. Emphasis is given to the health education of villagers and the prevention of complications through prenatal care and referral of patients at risk. The manual is effectively illustrated and includes a sample antenatal card, a glossary of terms used, and an index. Although it was published in 1972, the manual remains one of the best books of its kind. It has been translated into French to form part of the WHO Source Library, which will be used in auxiliary training institutions in developing countries.

- 016 Verderese, M.L. and L.M. Turnbull. *The Traditional Birth Attendant in Maternal and Child Health and Family Planning: A Guide to Her Training and Utilization*. World Health Organization Offset Publication No. 18. Geneva, 1975. 111 pp. Available in English and French from the WHO booksellers. Cost: Sw. fr. 14.

This report is based on a worldwide survey of traditional birth attendants (TBAs) carried out by the World Health Organization (WHO) in 1972, plus the guidance obtained from WHO-sponsored interregional and regional meetings on the subject of TBAs. The publication is designed for health administrators, educators, and supervisors of midwifery personnel, and particularly for those who are or will be responsible for the training and supervision of TBAs. It contains a composite profile of the TBA; a detailed outline of a hypothetical training program based on behavioral objectives relating to various aspects of maternal and child health and family planning; suggestions for how to link the TBAs activities with those of the organized health system and the community; suggestions for the supervision and evaluation of trained TBAs; and suggestions for areas of future research. Guidelines are provided for better training and utilization of TBAs and their supervisors in order to improve services available for mothers and children who live outside the centrally organized system of maternity care.

- 017 Waife, R.S. and M.C. Burkhardt, eds. *The Nonphysician and Family Health in Sub-Sahara Africa. Proceedings of a Conference*. Chestnut Hill, MA: The Pathfinder Fund, 1981. 141 pp. Available from the Pathfinder Fund, 1330 Boylston Street, Chestnut Hill, MA 02167, USA. Cost: US \$7.00 Also available in French.

This useful book contains short presentations on technical, organizational, and policy aspects of using nonphysicians to improve family health. Major sections cover advantages of nonphysicians, roles of nonphysicians, training nonphysicians, and policy change. Although emphasizing African experience, presentations go as far afield as Thailand, Mexico, and Mississippi (USA). Participants in the conference (held in Freetown, Sierra Leone) on which this book is based unanimously supported better utilization of nonphysicians and the continued expansion of their role. They do not, however, overlook the obstacles to this.

- 018 Williams, C.D. and D.B. Jelliffe. *Mother and Child Health. Delivering the Services*. London, Toronto, New York: Oxford University Press, 1972. 164 pp.

This book examines in detail the problems of mother and child health, particularly in developing countries, and then presents a practical guide to establishing services to solve these problems. The authors trace the history of the development of MCH services and discuss the cultural factors to be considered in each region, the childhood diseases likely to be encountered, the health hazards of overpopulation, and ways of measuring health in various countries. They outline the aims and scope of these services and explain in detail the organization of hospital wards for children or of health centers and clinics for mothers and children, the health education that should be made available to families as a whole, and the training of health workers, both medical and social, who operate MCH services.

The authors stress throughout the vital need for a close working relationship between the hospitals that provide curative services and the health centers and community-level workers that give preventive care. Suggestions are given as to how such integration may be achieved and how mother and child health services may best be adapted to suit local conditions. The book has 33 illustrations, many useful tables, and a good selective bibliography. Written over ten years ago, the book is currently being expanded and revised.

- 019 Williams, M. *The Training of Traditional Birth Attendants. Guidelines for Midwives Working in Developing Countries*. London: Catholic Institute for International Relations, no date. 34 pp.

Based on the author's experiences as a trainer of traditional birth attendants (TBAs), this book provides general guidelines. The introduction provides an overview of some of the issues that commonly concern the TBA trainer, including local customs and the status and selection of TBAs. Emphasis is placed on the characteristics of TBAs which make them special learners, including a generally low level of literacy. Topics covered are prenatal care, conception, fetal growth, nutrition, minor complications of pregnancy, labor, and care of the newborn. The book is written in simple language and should be useful to trainers of TBAs and those who wish to improve maternal health services by utilizing TBAs from the community.

- 020 World Health Organization. *The Epidemiology of Infertility. Report of a WHO Scientific Group*. Technical Report Series 582. Geneva, 1975. Available from the WHO booksellers. Cost: Sw. fr. 6.

This report is concerned with determining the magnitude and causes of infertility as a public health problem. This worldwide problem appears to be particularly acute in Sub-Saharan Africa, the main focus of this discussion. Problems associated with the measurement of infertility and pregnancy wastage are examined. Diseases most frequently associated with infertility and pregnancy wastage are discussed in respect to what is known or suspected about their relative importance. Included are: gonorrhoea, syphilis, genital tuberculosis, postabortal or postpartum sepsis, obstetric difficulties (e.g., obstructed labor), and other systemic and local infections. The authors describe and analyze several alternative research approaches, including surveys, for establishing major causes of infertility in a given population. Specific recommendations for data collection and analysis make the publication a useful tool for those interested in measuring levels of infertility in specific locales.

- 021 World Health Organization. *Health and the Status of Women*. (FHE/80.1). Geneva, 1980. 28 pp. Available from the Family Health Division, WHO, 1211 Geneva 27, Switzerland.

This publication presents an excellent overview of women's health in the context of their roles and status in society. The paper attempts to show how social customs and attitudes affect women's nutritional and health status and their access to health care; how their economic and educational levels affect their own health and that of their children; how changing family patterns and women's roles affect health; and how women's health affects their status and participation in development. Women's health problems—related to nutrition, fertility, and infections—are described and both health and broader interventions are suggested.

- 022 World Health Organization. *New Trends and Approaches in the Delivery of Maternal and Child Care in Health Services*. Technical Report Series, 600. Geneva, 1976. 98 pp. Available from WHO, Distribution and Sales Service, 1211 Geneva 27, Switzerland.

This report, prepared by a World Health Organization (WHO) expert committee, reviews worldwide trends in the health of mothers and children. It examines health problems and delivery systems as they relate to mothers and children to determine priorities and sources of care needed in the developing world.

Three problem areas are explored: 1) recent knowledge of health problems in mothers and children, including their multifactorial origins (an annex provides maternal and child mortality and morbidity data for various countries); 2) new approaches to the delivery of care, including development of a MCH "package" focussing special attention on nutrition, infection, and fertility regulation at the primary level; and 3) reorientation of training and education for all personnel adapted to local needs and based on realistic conditions. Eight specific areas of MCH care are examined, ranging from prenatal care of the mother to care and health education for adolescents. Specific health areas are targeted for priority intervention.

The service and manpower aspects of delivery are addressed. Major problems are also discussed relating to the unequal distribution of health care at various levels. Basic rural services suffer in favor of urban specialists and hospital care. The committee feels the challenge to reverse this trend can best be met through the development of primary health care as the highest priority of the health network. Services must be located in the community to assure the necessary continuity of care demanded by effective MCH services.

This publication should be of value to those interested in the rationale behind the current focus on the delivery of integrated primary health care services in the developing world.

- 23 World Health Organization. *Risk Approach for Maternal and Child Health Care. A Managerial Strategy to Improve the Coverage and Quality of Maternal and Child Health/Family Planning Services Based on the Measurement of Individual and Community Risk*. World Health Organization Offset Publication No. 39. Geneva, 1978. 42 pp. Available in English, French, and Spanish from the WHO booksellers. Cost: Sw. fr. 9.

Designed to help in the planning and organization of MCH services, this book outlines the important "risk approach" for screening priority health problems of mothers and children by determining individual and community risk. The approach is intended to promote rational resource utilization and to facilitate development of local strategies and decisions on appropriate care. Details of the risk approach described here are complex and not easily understood by the generalist reader. The World Health Organization has just completed revising this publication.

- 024 World Health Organization. *Traditional Birth Attendants: An Annotated Bibliography on Their Training, Utilization and Evaluation*. 1979, 68 pp. *Supplement I*. 1981, 37 pp. *Supplement II*. 1982, 65 pp. Available from the Family Health Division, WHO, 1211 Geneva 27, Switzerland.

This annotated bibliography and two supplements constitute a comprehensive compilation and summary of literature on traditional birth attendants (TBAs). The series is part of a continuing effort by the World Health Organization to identify, gather, synthesize, and disseminate significant information throughout the world about TBA activities and TBA training and research projects that have taken place over the past decade. In addition to materials concerned with training, utilization, and evaluation of TBAs, items are included on the training of teachers and supervisors; legislation and regulations governing the practices of TBAs; referral systems; beliefs and practices concerning pregnancy, childbirth, and maternal health; and teaching/learning aids and methods. The bibliography itself contains 178 entries; Supplement I contains 62 entries; and Supplement II contains 87 entries. An effort has been made to annotate each entry in detail, especially for works which may be difficult to obtain, such as reports on workshops, seminars, and meetings. Each volume in the series contains an author index, geographical index, index of selected subjects, directory of addresses of publishers and institutions, titles used to designate TBAs in various countries, and a listing of non-annotated materials.

- 025 World Health Organization, Regional Office for the Eastern Mediterranean. *Traditional Practices Affecting the Health of Women and Children. Report of a Seminar. Khartoum, 10-15 February 1979*. Alexandria, Egypt, 1981. Available from the WHO booksellers. Cost US \$3.00.

A summary of papers presented at a 1979 seminar, this publication provides useful information on traditional health practices in Africa and the Middle East. The principal areas discussed are nutritional taboos and traditional practices in pregnancy and lactation, female circumcision, and child marriage and early teenage pregnancy. The book and the individual papers it contains clearly distinguish between useful, harmless, and harmful practices and how programs should handle each type.



A prenatal exam in Laos. WHO/ 5628, J. Mohr

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- 052 Baumslag, N. "Africa/IR/IN Nutrition Position Paper." Washington, DC: U.S. Agency for International Development, 1983 (draft).
- 053 ———. "Women's Health and Nutrition Status in Developing Countries." Washington, DC: U.S. Agency for International Development, 1983 (draft).
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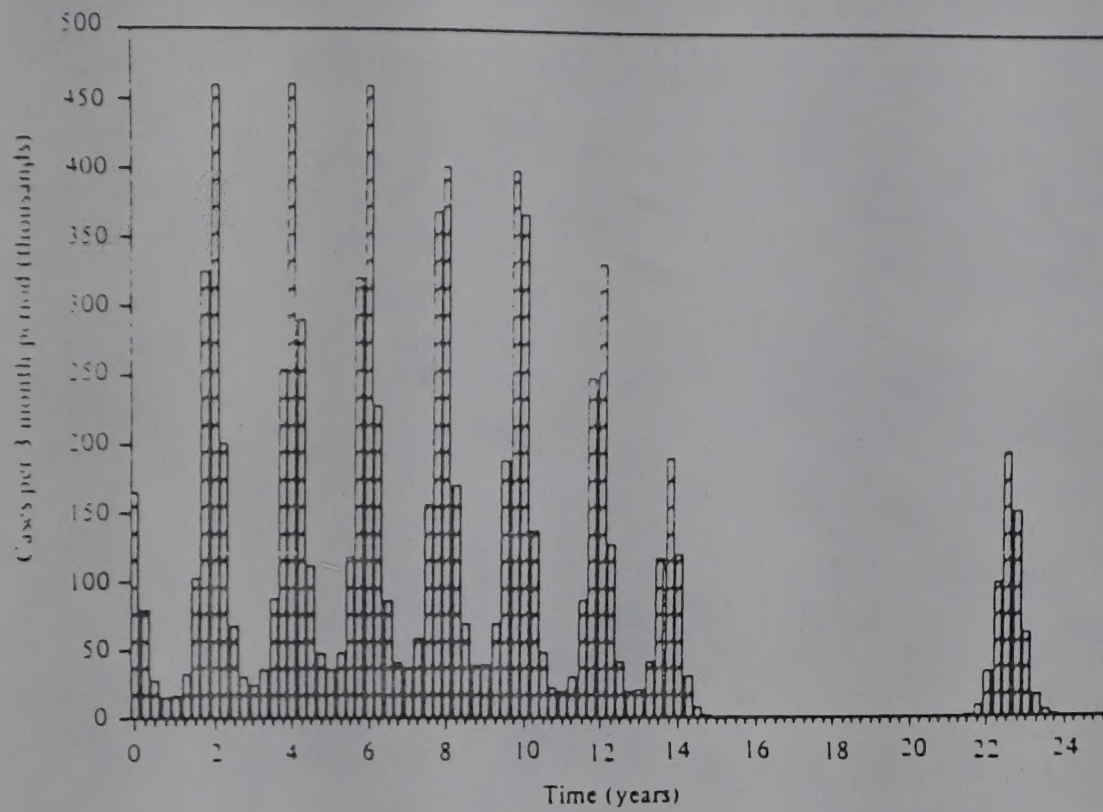


Fig 10. Predicted effect of widespread immunization. The level of immunization was held constant for 15 years at 80% of 1-2 year old children.

After Anderson and May, 1985

